

**BBC**

**A3010 • A5000 • ARC • BBC • MASTER • A3000**

# ACORN USER

APRIL 1993

**£1.80**

## BE A MOVIE MAKER

From video to Replay  
file with the new  
DIY system

Three major new  
Acorn releases

**PREVIEW**  
Acorn User's  
Spring show

ISSN 0263-7456



9 770263 745024

# SCSI systems

## The complete

### CD ROM Systems

Our CD ROM systems comprise of a Toshiba mechanism (Multisession - Photo CD compatible), a Morley SCSI card, a set of stereo speakers and four collections of discs to choose from (see below). The software on these discs is all RISC OS software and requires no use of a PC emulator whatsoever.

Collection 1 **£649.00**

*(Grooves, Creepy Crawlies, Image Warehouse)*

Collection 2 **£729.00**

*(Grooves, Creepy Crawlies, Image Warehouse and Hutchinsons Encyclopedia)*

Collection 3 **£769.00**

*(Grooves, Creepy Crawlies, Image Warehouse and Dictionary of the living world)*

Collection 4 **£849.00**

*(Grooves, Creepy Crawlies, Image Warehouse, Hutchinsons Encyclopedia and Dictionary of the living world)*

CD ROM Drive & SCSI Interface **£489.00**



### Hard Disc Systems

The Morley Hard Disc systems comprise of a SCSI card together with all the necessary cables, SCSI management software, Hard Disc and a detailed manual. Effectively giving the user a 'plug in and go' solution to Hard Disc storage. Many of our existing customers have commented about how easy it was to connect their Morley Hard Disc to their computer.

External Hard Discs are housed in an attractive metal case with dual SCSI connectors and device ID switch already fitted. As with all of our SCSI cards CDFS is installed as standard.

A3000 or External 40Mb **£349.00**

A3000 or External 80Mb **£499.00**

A3000 or External 240Mb **£709.00**

A300/400/5000 Internal 40Mb **£269.00**

A300/400/5000 Internal 80Mb **£449.00**

A300/400/5000 Internal 240Mb **£699.00**



### Syquest Hard Discs

Our removable Cartridge Hard Disc systems are designed to offer the end user the ultimate in terms of portable, mass storage. The systems come in a choice of either 42Mb or 88Mb sizes (non interchangeable). With the benefit of a small on-board cache the mechanisms offer superb performance with transfer rates exceeding that of many standard fixed hard discs.

The biggest advantage of these systems is that when a cartridge is full, you simply have to insert a new cartridge and you have another full 42Mb or 88Mb to play with.

#### All systems

42Mb system **£499.00**

88Mb system **£775.00**

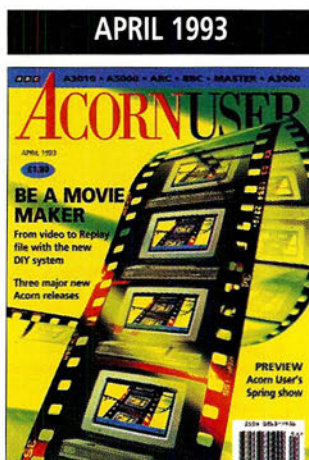
*(Both include SCSI Interface & one cartridge)*

#### Consumables

42Mb Cartridges **£65.00**

88Mb Cartridges **£109.00**





COVER: ROBERT CLIFFORD AND GEORGE SNOW

**Editor** Karen Donaghay  
**Technical Editor** Mark Moxon  
**Production Editor** Fin Fahey  
**Art Editor** Tony Judge  
**Contributing editors** Ian Burley: News  
 Sam Greenhill: Games  
**Group Advertisement Manager**  
 Duncan Pringle  
**Advertisement Manager**  
 Richard Power  
**Senior Sales Executive** Areef Vohra  
**Promotions Executive** Jane McCann  
**Ad Production Controller** Fiona Senior  
**Production Controller** Fiona Andrews  
**Production Manager** Jennifer Jeffrey  
**Ad Services Manager** Ray Kelly  
**Editorial Director** Christopher Ward  
**Managing Director** Michael Potter  
**Publishing Director** Seamus Geoghehan  
**Publisher** Robert Marriott



Published by Redwood Publishing,  
 a BBC Enterprises Company, 101  
 Bayham Street, London NW1  
 0AG. Tel: 071-331 8000. Fax:  
 071-331 8001. Redwood Reader  
 Services Executive: 071-331 8022.  
 Bureau setting and ad typesetting

by Bold Gray Design, 52 Rosebery  
 Avenue, London, EC1R 4RP. Colour by  
 Trumps Studio, Ware, Herts. Printed by  
 Cradley Print Ltd, West Midlands.  
 Distributed by BBC Frontline, Park House,  
 117 Park Road, Peterborough. ©  
 Redwood Publishing 1993. UK Basic  
 Annual Subscription Rate: £22.95

All rights reserved. Acorn is a registered  
 trademark of Acorn  
 Computers Ltd.



Redwood Publishing is a  
 registered data user. ISSN  
 0263 7456.

#### PRODUCED ON THE ARCHIMEDES

All the editorial pages in  
 BBC Acorn User are pro-  
 duced using Acorn  
 computers,  
 Computer Concepts'  
 Impression 2, LaserDirect  
 printers and Taxan monitors

<b>NEWS</b>	<b>7</b>
<b>EDUCATION COLUMN</b>	<b>13</b>
<b>GRAPHICS COLUMN</b>	<b>15</b>
<b>COMMS COLUMN</b>	<b>16</b>
<b>THE NEW SUBSCRIBERS' DISC</b>	<b>18</b>
Free to subscribers, the magazine disc is now indispensable	
<b>FOUR OF A KIND</b>	<b>22</b>
New from Acorn: Replay DIY, the Multimedia Expansion Unit, Alink and Advance	
<b>PLAYING AROUND</b>	<b>29</b>
A round-up of current educational games software	
<b>SURVIVING THE RISCS</b>	<b>47</b>
All those Risc OS 3 problems solved	
<b>ACORN USER SHOW GUIDE</b>	<b>51</b>
Your eight-page guide to what's on at the Acorn User Spring Show	
<b>ABSOLUTE BEGINNER</b>	<b>63</b>
We take a look at all those sockets on the back of your machine	
<b>PROGRAMMING SECTION</b>	<b>67</b>
<b>*INFO</b>	<b>69</b>
Risc OS patches, zany graphics demos, sorts, mad monkeys; need we go on?	
<b>BIO LOGICALLY</b>	<b>79</b>
Hexadecimal Dump and Tone Dialler: two modules for the ever-growing Bio	
<b>MOVING TARGETS</b>	<b>82</b>
Our games designing series moves on to animated aliens and pattern files	
<b>ASSEMBLY LINE</b>	<b>85</b>
Stacks of recursion and Persian carpets, all in super-fast Arm code	
<b>YELLOW PAGES</b>	<b>89</b>
<b>FREE ADS</b>	<b>99</b>
<b>TRUE TO TYPE</b>	<b>102</b>
A visit to the Electronic Font Foundry clarifies the world of fonts	
<b>ORCHESTRAL MANOEUVRES</b>	<b>107</b>
This month, a case study of music in education	
<b>CODERS' CHOICE</b>	<b>113</b>
Showdown of the program editors: DeskEdit 2 versus DBEdit	
<b>QUICK ON THE DRAW</b>	<b>116</b>
Minerva's computer-aided design package, CADet, under the spotlight	
<b>IN BRIEF</b>	<b>119</b>
Short reviews of My World 2 and Digital Symphony	
<b>GAMES SHOW</b>	<b>123</b>
Reviews of Battle Chess, The Hacker and Dragonball, plus hints and tips galore	
<b>NEXT MONTH</b>	<b>129</b>
<b>QUESTIONS AND ANSWERS</b>	<b>131</b>
<b>LETTERS</b>	<b>136</b>

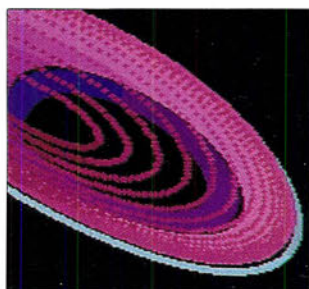
## 22 ACORN REPLAY



## 51 SHOW GUIDE



## 69 \*INFO



## 107 MUSIC IN SCHOOL



# ICS

051-625-1006

## SOFTWARE

**1**0 out of 10 Early Essentials Triple R £19  
10 out of 10 English Triple R £19  
10 out of 10 Maths (Number) Triple R £19  
1st Word Plus Acom £63  
- extra copy of manual Acom v0 £10

**3**D Construction Kit (not OS 3.1) Domark £35

**A**3000 Technical Reference Manual Acom v0 £30

A4 Technical Reference Manual Acom v0 £65  
A5000 Technical Reference Manual Acom v0 £65

A540 Technical Guide Acom v0 £65

Acheton / Kingdom of Hamil Topologika £17

Accounts ACS £245

Adventure Playground, age 5-8 Storm £21

Aggressor Atomic £15

Air Supremacy Superior £17

Aldebaran ArcAngels £26

Alerion Dabs £12

Alien Invasion Dabs £12

All-In Boxing Dabs £12

Alpha-Base Clares £36

ALPS Adventure Language Alpine £28

Amazing Ollie, age 4+ Storm £14

Ancestry Minerva £59

ANSI C Release 4 User Guide Acom v0 £25

Arcade 3 Compilation Clares £12

ArcComm 2 Longman £47

ArcDFS Dabs £22

ArcFAX David Pilling £19

Arcendium Dabs £12

Archimedes Assembly Language Dabs v0 £15

- with disc Dabs £22

Archimedes First Steps Dabs v0 £10

Archimedes Game Maker's Manual Sigma v0 £15

Archimedes Operating System Dabs v0 £15

- with disc ExpLAN £165

Architech Simtron £78

ArcLight Ace £45

ArcMonitor CIS £21

Arcol Desktop ExpLAN £49

Accounts Manager Visionscan £295

ARC-PCB Silicon £99

- Professional Silicon £234

- Schematics Silicon £319

ArcSpell 1 Xavier £29

ArcSpell 2 Xavier £29

ArcTerm 7 Serial Port £59

ArcTiculate Fourth Dim £19

ARCTist Fourth Dim £19

ArcTrivia Moray £21

Arventure I ... The Romans, age 10-12 Sherston £27

Arventure II ... The Egyptians, age 8-9 Sherston £27

Armadeus Clares £59

Armadeus Sampler Board Clares £129

Artisan II Clares £43

Art Machine Pack 1 Topologika £39

Art Machine Pack 2 Topologika £39

**ArtWorks** CC £129

- network licence £655

- site licence £545

Astro Topologika £35

Atelier Minerva £69

AUN/Level 4 Fileserver Acom £395

Avon & Murdac Topologika £16

**B**adger Trails, age 9-11 Sherston £32

Bambuzzle (not OS 3) Arxe £16

BASIC V Dabs v0 £10

Basic Wimp Programming Dabs v0 £POA

Battletank Minerva £9

BBC Basic Guide Acom v0 £21

Beginner's Guide to Wimp Programming on the Archimedes Sigma v0 £13

Birthday Present Topologika £POA

Black Angel Fourth Dim £26

Blitz Arxe £17

BlowPipe Leading Edge £14

Bobby Blockhead vs The Dark Planet Atomic £15

Bookstore, age 7-16 ESM £37

Break 147 & Superpool Fourth Dim £25

MARCH 1993

Budget DTP Dabs v0 £13  
Bug Hunter / MoonDash Minerva £10  
Bug Hunter in Space Minerva £10  
Business Accounts Minerva £298

**C** (new edition) Dabs v0 £16  
- with disc £24  
CableNews Lingenuity £136  
CADet Minerva £135  
Cartoon Collection Micro Studio £16  
Casino Minerva £11  
Castle of Dreams, age 9+ Storm £22  
Cataclysm Fourth Dim £18  
Caverns Minerva £10  
C Development System RISC £77  
Chameleon (new version) 4maton £33

## Champions Compilation £24

Charts & Graphs Computer Tutorial £17

ChartWell RISC £25

Chatter 4maton £34

Chequered Flag CIS £18

- Extra Circuits CIS £16

Chess 3D Micro Power £21

Children's Graphics Micro Studio £16

Chocks Away Fourth Dim £19

- Compendium Fourth Dim £27

- Extra Missions Fourth Dim £15

Chopper Force Fourth Dim £22

Christmas Adventure, age 5-8 Storm £19

Christmas Allsorts Sherston £15

Chuck Rock Krisalis £19

Clip Art Graphics Factory £19

- Vol 1 (General), sprites £19

- Vol 2 (General) / Vol 3 (Animals) / Vol 4 (Sport) / Vol 5 (Characters) each £25

Clip Art Set 1, drawfiles Midnight £28

Clip Art Set 2, drawfiles Midnight £28

CNC Designer V3 for Lathe TechSoft £343

CNC Designer V3 for Lathe and Miller TechSoft £493

CNC Designer V3 for Miller TechSoft £343

Coffee, age 9+ Storm £28

Colour Screen-Mac Human £90

- Arc/Mac Cable Human £24

## ColourSep £15

- site licence ICS £45

ColourSep Starter Packs ICS £55

- DeskJet 500 (Mono) £85

- site licence £85

- BJ-10 with Cartridges £115

- site licence £40

- BJ without Cartridges £70

- site licence CC £34

Compression Computer Tutorial £17

Computer Basics Longman £23

Concept Designer Longman £25

Control Logo Triple R £9

Cops Alpine £15

Corruption Magnetic £21

Countdown to Doom / Return to Doom / Philosopher's Quest Topologika £25

Craftshop 1 4maton £19

Craftshop 2 4maton £19

Creato Alpine £31

Crisis CIS £15

Cross-32 Meta-Assembler Baldon £125

- manual for evaluation Baldon v0 £15

Crystal Rain Forest, age 8-11 Sherston £37

Curves Topologika £39

Cyber Chess Topologika £38

Cyborg Fourth Dim £19

**D**ataGraph Topologika £29

Datapower Iota £145

DataVision Silicon £79

DataWord Triple R £15

DBEdit 4maton £28

Decorated Alphabet, sprites Micro Studio £17

Designer V3 TechSoft £193

Designer Intro (not OS 3) TechSoft £75

Designer's Graphics, draw/sprites Micro Studio £16

DeskEdit2 RISC £27

Desktop Assembler Release 2 Acom £119

## Desktop C Release 4 £180

Desktop Database Acom £52

Desktop Folio Iota £60

- Themes: Christmas, Editors, Maths, Space, World War II each £22

Desktop Office v2 Minerva £95

Desktop Publishing on the Archimedes Sigma v0 £13

Desktop Thesaurus RISC £18

Detect-a-Pet, age 5-11 ESM £49

DFS Reader RISC £9

## DrawBender £10

- site licence ICS £30

IDraw\_Help Sherston v0 £16

Draw Print & Plot Oak £29

Dreamwave ESM £34

Drop Ship Fourth Dim £15

DTP Graphics 1 Mono, sprites Micro Studio £15

DTP Graphics 2 Colour Micro Studio £17

DTP Graphics combined Micro Studio £25

DTP Seeds 4maton v0 £8

DTP Theme Packs, age 5-16 ESM £35

- Christmas each £29

- Editor's, Maths Fourth Dim £26

Dungeon Fourth Dim £26

**E**asiword Plus Minerva £54

EasiWriter 2 Icon £115

- Dictionaries: Danish / Dutch / French / German / Italian / Norwegian / Spanish / Swedish / Swiss German / Welsh each £30

## Ego: Repton 4 £18

Einstein Superior £106

Elite Ace £32

Elucidata (OCR) Hybrid £155

- bought with Irlam Scanner Irlam £79

Enter the Realm Fourth Dim £18

Equisor CC £37

Ethnic Borders 4maton £10

E-Type Compendium Fourth Dim £18

Euclid Ace £55

## Eureka £99

ExcelonDrill Longman £63

Express Silicon £45

Eye for Spelling Midnight £32

**F**amily Favourites (not OS 3) Minerva £11

Farmer Giles Computer Tutorial £16

Farmer Giles II Computer Tutorial £17

Fervour Clares £19

Film-Maker Silicon £63

Fireball II Xtra CIS £9

First Impression Word Processing v0 £28

## First Logo £24

First Words and Pictures Longman £21

Flare Chalksoft £22

Flexifile Silica £84

Flight Path, age 9+ Minerva £27

Flight Sim Toolkit Storm £31

**F**antasy ICS £15

- site licence £45

Fantasy / DrawBender / Placard ICS £30

- site licence £80

FontFX Data Store £9

- site licence £70

Font Pack - Newhall, Starter, Symbol each pack Acom £35

Font Pack 1 - Paladin, Swiss B, Symbol B, Vogue RISC £47

Font Pack - Avant Garde, Bookman, Pembrooke - each pack CC £24

Food for Thought Sherston £15

Freddy's Folly (not OS 3) Minerva £8

Freddy Teddy Topologika £19

- Balloons & The Zoo Topologika £29

- The Playground Topologika £29

- The Puddle & The Wardrobe Topologika £29

Freddy Teddy's Adventure Topologika £19

Fun School 2 Europress £17

- age -6, age 6-8, age 8+ each £17

Fun School 3 Europress £18

- age -5, age 5-7, age 8+ each £18

Fun School 4 Europress £18

- age -5, age 5-7, age 7-11 each £18

**G**alactic Dan Fourth Dim £19

Gammplot Minerva £36

Gate Array Design System Silicon £114

Genesis II Oak £99

Genesis Plus Oak £68

GerberPlot Silicon £63

Giant Killer, age 10+ Topologika £29

Giant Killer Support Disc Topologika £24

Glimpse Sherston £10

Gods Krisalis £19

Good Impression Word Processing v0 £25

Granny's Garden 4maton £23

Granny's Garden Resource Pack 4maton £15

GraphBox Minerva £57

GraphBox Professional Minerva £104

Graphics on the ARM Machines Dabs v0 £15

Graphic Writer Clares £24

Graph\_IT Sherston £19

Greetings Graphics, draw/sprites Micro Studio £16

Gribbly's Day Out Coin-Age £19

GridIT Widgit £30

Grievous Bodily 'ARM Fourth Dim £18

Guile Dream £24

**H**ard Disc Companion RISC £45

Hearsay II RISC £69

HelixBasic PDK £79

!Help 3 Sherston v0 £11

## Hero Quest £24

Highlighter, age 7-16+ Sherston £42

History Costume, sprites Micro Studio £16

Holed Out Compendium Fourth Dim £18

Home Accounts Minerva £34

## HotLink Presenter

Lingenuity £19  
House of Numbers Chalksoft £20

Hoverbod (not OS 3) Minerva £11

**I**bix the Viking (not OS 3) Minerva £11

IC SWI Baldon £15

- bought with Oddule £5

Illusionist Clares £69

Illustrators' Graphics, draw/sprites Micro Studio £16

Image Animator Iota £68

Image OCR Iota £POA

Image Outliner Iota £72

Imagery Palette Studio £70

# from Morley. solution.

## Tape Archive

Tape archive systems tend to be regarded as expensive add ons to an Acorn system. The part that people tend to forget about is how valuable is their data? If you manage a network just think how much time and cost would be wasted if the hard disc failed without you having a recent back-up. Using standard floppy discs for back-up is one option but is incredibly tedious if large amounts of data are involved.

The answer is a Morley Tape Archive system. With every system sold we supply a FREE copy of SAS (Safe & Sound) archiving software to make backing up and restoring as simple as possible. Don't get caught out!

External 250Mb system **£799.00**  
(Includes SCSI Interface & one 250Mb tape)

### Consumables

250Mb Tapes **£24.99**  
150Mb Tapes **£19.99**



## Floptical® Systems

The new Floptical® system has been developed in the USA by Insite Peripherals of California while the drives are being manufactured by Matsushita of Japan (one of the worlds largest electronic manufacturers). 3M and Hitachi are currently producing the special 21Mb discs which give this incredible amount of storage. Morley have developed the drive for use on the Acorn range of RISC OS computers and this can now read and write standard 800k and 1.6Mb floppies as well as the 21Mb Floptical® discs. Using the 21Mb discs these drives are approximately twice as fast as normal floppy drives making them perfect for use as a backup system or general purpose program/data storage.

External 21Mb system **£499.00**  
A5000 internal 21Mb system **£425.00**  
(Both include SCSI Interface & one disc)

### Consumables

21Mb disc each **£24.00**  
Pack of 5 x 21Mb discs **£99.00**



## Other Prices

### RISC OS CD ROM DISCS

Creepy Crawlies (MDI)	<b>£99.00</b>
Grooves (MDI)	<b>£59.00</b>
Image Warehouse (MDI)	<b>£59.00</b>
Dictionary Of The Living World (MDI)	<b>£175.00</b>
Hutchinsons Encyclopedia (PEP)	<b>£99.00</b>
Woodland (APA) (Incl. free RUCD)	<b>£150.00</b>
Frontier 2000 (CSH)	<b>£175.00</b>
Revelation 2 (Longman Logotron)	<b>£139.00</b>
British Birds (ILP)	<b>£150.00</b>

### Other Products

Morley Analogue & User I/F	<b>£59.00</b>
Morley SCSI card (inc. CDFS)	<b>£149.00</b>
Morley cached SCSI card (inc. CDFS)	<b>£199.00</b>
CD Caddies	<b>£6.50</b>

### Monitors

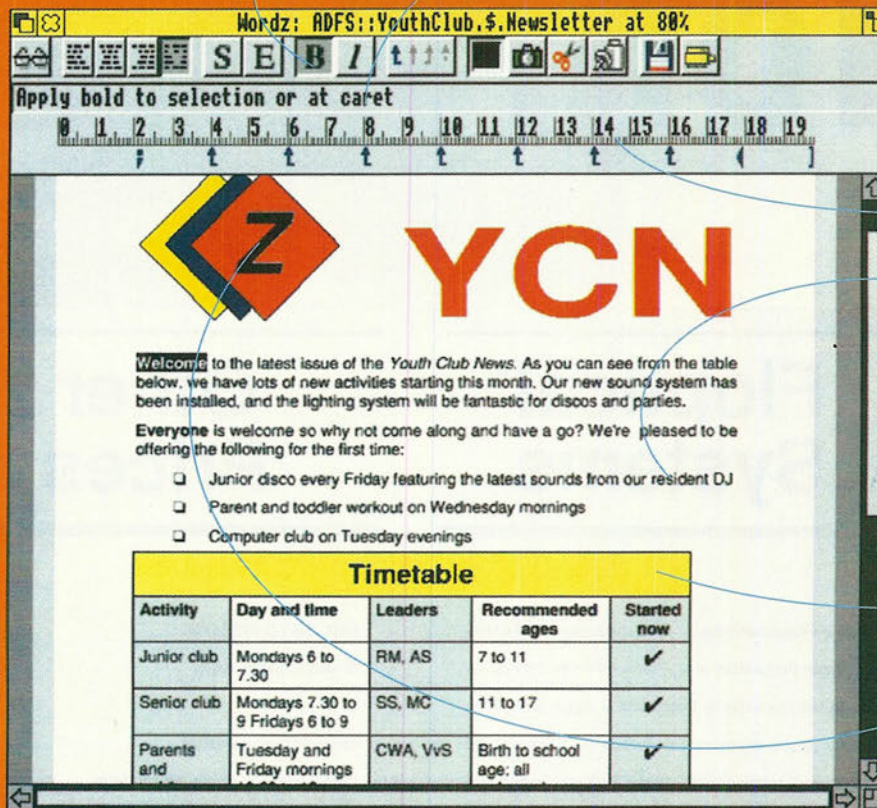
Microvitec CubScan 14" 0.28dp DMS	<b>£399.00</b>
Microvitec AutoScan 20" 0.31dp DMS	<b>£1,049.00</b>

Please note that all prices exclude VAT and carriage. E & OE

# MORLEY

ELECTRONICS LTD

Morley House, West Chirton, North Shields  
Tyne & Wear, NE29 7TY  
Tel (091) 257 6355  
Fax (091) 257 6373  
Intl. Tel (+44) 91 257 6355



At last, the word processor the Archimedes has been waiting for. A program that's so easy to use you'll be able to create great-looking documents the first time you use it. The facilities used most are in the *button bar*, and the *status line* gives you instant feedback. Just click and drag in the *ruler* to set margins and tabs; click on a button to cut and paste - it's that easy.

Wordz has all the features you'd expect from a state-of-the-art word processor. The powerful style editor gives you complete control over all aspects of your text; *font*, *spacing*, *margins*, and *colour*. Unparalleled control over *tables* including dragging to resize columns and rows. Speedy check-as-you-type or whole document spell checking. Import *pictures* and text from other programs, including PipeDream.

Wordz is the first of a family of programs which share the same easy user interface and include dynamic data linking. The spreadsheet Resultz will be available in mid-1993.

Wordz costs £99+VAT. "Is it easy to use? It's falling-off-a-log easy to use."

word<sup>®</sup> **Z!** <sup>™</sup>  
1993...4...

for a free Wordz brochure, complete and return this coupon

name

address

### COLTON software

2 Signet Court, Swanns Road,

Cambridge CB5 8LA

Telephone 0223 311881

Fax 0223 312010

## Nature Graphics, draw/sprites

Naughty Stories (set of 6)	Micro Studio	£16
Navigator	Sherston	£48
Nebulus	Topologika	£39
Nevryon	Krisalis	£19
Newton	Fourth Dim	£15
Night Sky	Longman	£20
Nominal Ledger	Clares	£67
Noot	Minerva	£78
Noot Art Disc	4mation	£41
Notate	4mation	£10
Note Invaders	Longman	£42
Numbers and Pictures	Chalksoft	£20
Number Zoo, age 3-6	Selective	£14
Numerator	Longman	£39
Numerator Chaos	Longman	£18

## Oh No! More Lemmings (requires Lemmings)

Ollie Octopus' Sketchpad, age 4+	Storm	£14
Omar Sharif's Bridge	Krisalis	£22
Order Processing/Invoicing	Minerva	£78
Orion	Minerva	£8
Orrery	Spacetech	£93
Ovation	RISC	£85
Overload	Clares	£13

## Padlock - site licence

Pandora's Box	Fourth Dim	£18
Pappus	Computer Tutorial	£17
Paradroid 2000	Colin-Age	£22
PC Access	Minerva	£19
PC Emulator 1.8	Acorn	£89
Pendown	Longman	£46
Pendown Etoiles	Longman	£49
Pendown Outline Fonts	Longman	£19
Pendown Plus	Longman	£68
Personal Accounts	Apricote	£29
Perspectives	TechSoft	£44
Pesky Muskrats	Colin-Age	£19
Picture Book	Triple R	£15
Picture It!	Applan	£29
- Topic discs	Each	£9
PinPoint	Longman	£65
- site licence		£390
PipeDream 3	Colton	£73

## PipeDream 4 £128

PipeDriver Dot 1	ICS	£10
Pipe Mania	Empire	£18
Pirate, age 8-14	Chalksoft	£19
Placard	ICS	£10
- site licence		£30
Plague Planet	Alpine	£13
PlayBack	RISC	£19
Play It Again Sam 1	Superior	£20
Plot	Clares	£POA
Podd	ESM	£25
Polyminoes	Topologika	£29
Populous	Krisalis	£22
Poster	4mation	£75
Powerband	Fourth Dim	£20
PowerROUTER	Silicon	£159
Prehistoric Animals, sprites	Micro Studio	£16
Premier	Circle	£71
- DataBase	Circle	£25
- WordProc	Circle	£25

## Presentation Task Force

Presenter GTI	Lingenuity	£66
PrimeArt	Minerva	£69
PrimeMover	Minerva	£POA
PrimeWord	Minerva	£54
Printer Drivers, RISC OS:		
BJ-10ex / BJ-200 TurboDriver + Cable	CC	£42
BJC-800 TurboDriver + Cable	CC	£89
CA (Canon PW1080A), CC (ColourCel), HP (HP Colour), JX (Epson / Star / Citizen colour) - each	Ace	£14
Deskjet 500C, Epson / Star colour - each	RISC	£15
IPrinters upgrade	Ace	£25
ProDrivers: Canon LBP8, Epson ESC-P2, HP Colourjet - each	Ace	£37
Pro Artisan	Clares	£70
ProArtisan 2	Clares	£POA
ProCAD	Minerva	£394
Programming in ANSI Standard C on the Archimedes	Sigma	vo £15
Prophet (requires 2 Mb)	Apricote	£132
Prophet Demo	Apricote	£10
Protext	Amor	£117
Provocator	Computer Tutorial	£15
Puncman 1 and 2	Chalksoft	£16
Puncman 3 and 4	Chalksoft	£16
Puncman 5 to 7	Chalksoft	£18
Punctuate	Xavier	£31
Punctuate!	Topologika	£25
Purchase Ledger	Minerva	£78

## Quest for Gold

QuickKey - site licence

## Real McCoy 2

Real McCoy 3

Recall, age 8-13

Redshift

Render Bender I

Render Bender II

Reporter

Repton 3

Resultz

Revelation 1

Revelation 2

Revelation 2 CD Rom

Revelation ImagePro

Reversals

Rhapsody 2

Rhapsody 3

Rhythm-Bed

RiscBASIC Compiler

RiscForth Compiler

Risc OS Companion Vol 1

Risc OS Extras 1992

Risc OS Programmer's Reference Manual

Risc OS Style Guide

RoboLogo

Round the World Yacht Race, age 9+

Sales Ledger

Saloon Cars Deluxe

- Deluxe Extra Courses

S-Base Developer

S-Base Developer Plus

S-BASE Personal

Schema

Schema 2

Science, drawfiles

Score Draw

Scorewriter

- PMS Dot matrix, Version 1

- PMS Dot matrix, Version 2

- PMS PostScript

ScreenPlay

ScreenTurtle

Search and Rescue, age 9+

Seashore Guide, drawfiles

Serenade

Sesame Street

- Letters for You

- Numbers Count

ShapeFX

ShareHolder

ShareHolder Professional

Shylock Gnomes, age 10-15

Sim City (due April)

SkyHunter

smArt

smArt Aliens, Animals, Dinosaurs, Egypt, Faces\*, Fantasy, Fashion, Fiddles & Drums, Heraldry, Homes\*, Leisure\*, Look Smart, Smartoons, Trees and Gardens

\*Please specify English, French, German, Spanish or Welsh - each

smArtFiler

smArt Modern Languages

Smudge the Spaniel, age 4-8

Snippet (new version)

Soapbox

SolidCAD

SolidsRender

Krisalis	£19
ICS	£10
	£30

Fourth Dim	£23
Fourth Dim	£23
Sherston	£39
Minerva	£10
Clares	£58
Clares	£78
Minerva	£29
Superior	£14
Colton	£POA
Longman	£39
Longman	£75
Longman	£98
Longman	£127
Chalksoft	£17
Clares	£45
Clares	£POA
Clares	£39
Silicon	£79
Silicon	£79
Oak	vo £49
Acorn	£9
Acorn	vo £79
Acorn	vo £11
Silicon	£39
Storm	£29

Minerva	£78
Fourth Dim	£25
Fourth Dim	£16
Longman	£175
Longman	£275

Longman	£95
Clares	£89
Clares	£POA
Micro Studio	£25
Clares	£44
EMR	
	£127
	£147
	£422
Widgit	£35
Topologika	£44
Storm	£27
Micro Studio	£16
Clares	£109
Electric Crayon	
	£16
	£16
Data Store	£10
Silicon	£106
Silicon	£234
Selective	£16
Krisalis	£24
Longman	£22
4mation	£50

Acorn	vo £79
Acorn	vo £11
Silicon	£39

Minerva	£78
Fourth Dim	£25
Fourth Dim	£16
Longman	£175
Longman	£275

Longman	£95
Clares	£89
Clares	£POA
Micro Studio	£25
Clares	£44
EMR	
	£127
	£147
	£422
Widgit	£35
Topologika	£44
Storm	£27
Micro Studio	£16
Clares	£109
Electric Crayon	
	£16
	£16
Data Store	£10
Silicon	£106
Silicon	£234
Selective	£16
Krisalis	£24
Longman	£22
4mation	£50

Acorn	vo £79
Acorn	vo £11
Silicon	£39

Minerva	£78
Fourth Dim	£25
Fourth Dim	£16
Longman	£175
Longman	£275

Longman	£95
Clares	£89
Clares	£POA
Micro Studio	£25
Clares	£44
EMR	
	£127
	£147
	£422
Widgit	£35
Topologika	£44
Storm	£27
Micro Studio	£16
Clares	£109
Electric Crayon	
	£16
	£16
Data Store	£10
Silicon	£106
Silicon	£234
Selective	£16
Krisalis	£24
Longman	£22
4mation	£50

Acorn	vo £79
Acorn	vo £11
Silicon	£39

Minerva	£78
Fourth Dim	£25
Fourth Dim	£16
Longman	£175
Longman	£275

Longman	£95
Clares	£89
Clares	£POA
Micro Studio	£25
Clares	£44
EMR	
	£127
	£147
	£422
Widgit	£35
Topologika	£44
Storm	£27
Micro Studio	£16
Clares	£109
Electric Crayon	
	£16
	£16
Data Store	£10
Silicon	£106
Silicon	£234
Selective	£16
Krisalis	£24
Longman	£22
4mation	£50

Acorn	vo £79
Acorn	vo £11
Silicon	£39

Minerva	£78
Fourth Dim	£25
Fourth Dim	£16
Longman	£175
Longman	£275

Longman	£95
Clares	£89
Clares	£POA
Micro Studio	£25
Clares	£44
EMR	
	£127
	£147
	£422
Widgit	£35
Topologika	£44
Storm	£27
Micro Studio	£16
Clares	£109
Electric Crayon	
	£16
	£16
Data Store	£10
Silicon	£106
Silicon	£234
Selective	£16
Krisalis	£24
Longman	£22
4mation	£50

Acorn	vo £79
Acorn	vo £11
Silicon	£39

Minerva	£78
Fourth Dim	£25
Fourth Dim	£16
Longman	£175
Longman	£275

Longman	£95
Clares	£89
Clares	£POA
Micro Studio	£25
Clares	£44
EMR	
	£127
	£147
	£422
Widgit	£35
Topologika	£44
Storm	£27
Micro Studio	£16
Clares	£109
Electric Crayon	
	£16
	£16
Data Store	£10
Silicon	£106
Silicon	£234
Selective	£16
Krisalis	£24
Longman	£22
4mation	£50

Acorn	vo £79
Acorn	vo £11
Silicon	£39

Minerva	£78
Fourth Dim	£25
Fourth Dim	£16
Longman	£175
Longman	£275

Longman	£95
Clares	£89
Clares	£POA
Micro Studio	£25
Clares	£44
EMR	
	£127
	£147
	£422
Widgit	£35
Topologika	£44
Storm	£27
Micro Studio	£16
Clares	£109
Electric Crayon	
	£16
	£16
Data Store	£10
Silicon	£106
Silicon	£234
Selective	£16
Krisalis	£24
Longman	£22
4mation	£50

Acorn	vo £79
Acorn	vo £11
Silicon	£39

Minerva	£78
Fourth Dim	£25
Fourth Dim	£16
Longman	£175
Longman	£275

Longman	£95
Clares	£89
Clares	£POA
Micro Studio	£25
Clares	£44
EMR	
	£127
	£147
	£422
Widgit	£35
Topologika	£44
Storm	£27
Micro Studio	£16
Clares	£109
Electric Crayon	
	£16
	£16
Data Store	£10
Silicon	£106
Silicon	£234
Selective	£16
Krisalis	£24
Longman	

## PRINTERS . . .

ArcLaser 300-6	Calligraph	£895
ArcServer 300-8	Calligraph	£985
Bubble Jet BJ-10ex	Canon	£187
Bubble Jet BJ-10ex + TurboDriver	Canon/CC	£219
Bubble Jet BJ-20	Canon	£255
Bubble Jet BJ-200	Canon	£282
Bubble Jet BJ-300	Canon	£299
Bubble Jet BJ-330	Canon	£405
Bubble Jet BJ-800 + TurboDriver	Canon/CC	£1499
DeskJet 500	Hewlett-Packard	£299
DeskJet 500C	Hewlett-Packard	£375
DeskJet 550	Hewlett-Packard	£475
Laser Direct HiRes4 with 50-sheet tray	CC	£899
- 250-sheet Paper Cassette	CC	£99
Laser Direct HiRes8	CC	£1280
Laser Direct LBP-4 Card	CC	£325
LBP-4	Canon	£659
Refill toner cartridge for Canon EPS		£50
New toner cartridge for Canon LBP-4		£59

## SCANNERS, DIGITISERS . . .

ArcScanner including Epson GT-4000	Claris	£1660
Colour Converter	Lindis	£145
FaxScan	Spaceteck	£94
Handipad	TechSoft	£173
Hawk V9	Wild Vision	£199
- A3000 version	Wild Vision	£278
Hawk V9 MkII	Wild Vision	£259
HiVision Digitiser Colour	HCCS	
- A3000 External		£137
- A3000 Series / A4000 Internal		£124
- A5000 / 300 / 400		£124
- Upgrade from Vision		£45
iMage (Sharp JX-100)	Irlam	
- for A5000		£490
- for other computers		£589
Image Scanner	Iota	£383
- Colour Upgrade Kit	Iota	£239
- Fast Parallel Card	Iota	£98
i-Scan 200	Irlam	£539
i-Scan 400	Irlam	£589
Pineapple Colour Video Digitiser	Pineapple	£195
- A3000 boxed	Pineapple	£230
Prolmage (Epson GT6000)	Irlam	
- for A5000		£989
- for other computers		£1089
Scan-Light A4	CC	£277
- with Sheet Feeder	CC	£360
Scan-Light 256	CC	£190
- A3000 internal	CC	£190
Scan-Light Professional	CC	£565
- as above + SCSI interface	CC	£699
Snapshot Colour Video Digitiser	Lingenuity	£195
- A3000 version	Lingenuity	£275
Spectra	RISC	
- Archimedes / A5000		£545
- A3000 Series / A4000 Internal		£545
- A3000 External		£555
Vision Digitiser	HCCS	
- A5000 / 300 / 400 Mono		£48
- A5000 / 300 / 400 Colour		£76
- A3000 External Mono		£60
- A3000 External Colour		£89
- A3000 Series / A4000 Internal Mono		£48
- A3000 Series / A4000 Internal Colour		£76

"You wonder how you ever managed without QuickKey."

**NOW ONLY £10**

"Congratulations on ColourSep! The results, compared with the drivers currently available, are bordering on the fantastic."

**NOW ONLY £15**



"TWO is the best thing I've ever bought."

**NOW ONLY £10**



Padlock is our top seller for simple disc security.

"Fantasy offers a wider range of effects than FontFX. It is a package for the perfectionist, whether professional or enthusiast."

**NOW ONLY £15**

"DrawBender is quite stunning."

**NOW ONLY £10**

As well as letting you type all those extra characters, Special is the easiest way to examine new fonts.

## HOW TO ORDER

**VAT:** Zero-rated items are marked V0. UK customers please add 17.5% to all other prices. EC customers outside the UK (including BFPO) please do the same unless you are VAT registered, in which case quote your international VAT number. Ours is GB 595 7258 84.

**CARRIAGE IS FREE WITHIN MAINLAND UK IF YOU PAY ON ORDERING.**

**Overseas carriage:** If you are paying by credit card we will add airmail and insurance at cost. Otherwise please add £6 (Europe) or at least £12 (elsewhere) for each software item and send a pounds sterling bank draft payable at a London clearing bank, or Eurocheques for not more than £100 each.

**Credit cards** are welcome. We do not charge your account until your order is fulfilled. Your name and address must be as known to the credit card company. If you are leaving an order on our answering machine please include your telephone number, the expiry date of your card, and your calculation of the total payment due. We will make no charge for credit card commission unless we have informed you first.

**Official orders** are welcome from UK government and educational institutions. Payment is due in 14 days. Invoices are subject to carriage and late payment charges.

**Site licences** are available for most products. Please check our prices.

All products, prices and specifications are offered in good faith and are subject to change without notice. We process all orders immediately, but suppliers do sometimes keep us waiting. Goods are guaranteed but we do not supply them on approval. Returns and cancellations can only be accepted by prior agreement and there may be a charge to cover the costs involved.



AUTHORISED ACORN DEALER

# ICS (Ian Copestake Limited)

Dept B41, 1 Kington road, West Kirby, WIRRAL, Merseyside, L48 5ET

**Tel: 051-625 1006**

**Fax: 051-625 1007**



## ACORN TURBOPOWERS THE 3010

ACORN was the only computer manufacturer to attend the recent 7th International Computer Show at Wembley. Acorn's highlight was the launch of a new package, based on the existing Acorn A3010 bundle.

The Family Turbo Pack, contains an A3010, the *Lotus Turbo Challenge 2* game, a Quickshot joystick, £200 worth of software vouchers and a year's on-site maintenance agreement. The inclusive price of the pack is £499 including VAT.

The stand also featured a competition which is based on the *Lotus Turbo Challenge 2* game and run jointly with Lotus Cars. Show visitors tried out their driving skills in the competition. Acorn plans to run this competition at the *Acorn User Spring Show* and through participating Acorn dealers between 15th March and the end of August.

Four regional finalists will win a visit to the Lotus car factory in Norfolk. They will then take part in a national



Acorn's sales drive goes into higher gear

final to vie for an all-expenses paid trip to the Italian Grand Prix in September.

Other familiar Acorn suppliers, such as Minerva,

turned up at the 7th International computer show, and although the Acorn presence was modest, it was greater than that of previous shows.

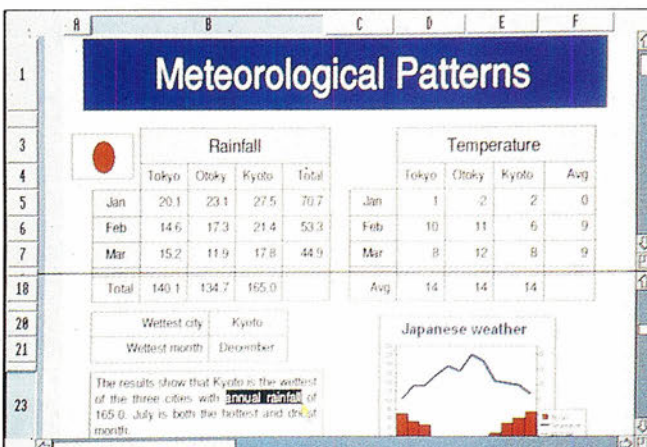
## GETTING THE RESULTZ

COLTON Software has begun shipping its new easy-to-use but fully-featured word processor, *Wordz* at £99+VAT.

Colton Software has also been working on *Resultz*, its new stand-alone spreadsheet. *Resultz* and *Wordz* were developed in parallel, so data sharing will be a key feature.

*Resultz* is a fully Risc OS compliant package. As with *Wordz*, ease of use is a priority and a version of the *Wordz* button bar is featured. *Resultz* will be shown at the *Acorn User Spring Show*.

For more details, contact Colton Software on (0223) 311881.



Resultz is Colton's forthcoming easy-to-use spreadsheet

### NEWS IN BRIEF

● This year's Bett show, held for the first time at the National Hall Olympia, was a resounding success. 14,389 teachers and education administrators attended the show over its four days, a record figure.

Acorn firms netted prizes in the annual educational technology awards, with Sherston Software gaining a Gold Award in the Primary Category for *Crystal Rainforest*, and a bronze for Northwest SEMERC in the same category for its Oldham Overlay keyboard. Longman Logotron netted a bronze in the Secondary Category for its *Eureka* spreadsheet.

● Minerva Software has reported that it has found a well-known dealer copying its *EasiWord* word processor application without permission. Copies were supplied with A3020 computers sold to customers. Apparently, photocopied documentation was also offered.

While *EasiWord* is bundled with some A3010 computers, it is not in the public domain. However, Minerva has invited dealers wishing to bundle *EasiWord* for their customers to contact the company for details of 'special arrangements' which could be made. Minerva is on (0392) 437756.

● The successful Bubblejet printer from Canon has been reincarnated yet again. Canon's latest is the BJ-10sx, based on the BJ-10ex, currently the UK's best-selling printer.

The BJ-10sx has a RRP of £345+VAT compared to £299+VAT for the BJ-10ex, but street prices are considerably lower. The BJ-10ex remains in the Bubblejet model range and the BJ-10sx is positioned inbetween the BJ-10ex and the BJ200 (£399+VAT) announced last year.

The BJ-10sx has a faster printing speed than the BJ-10ex, and the extra £46 also provides for a redesigned control panel. A 50-sheet paper feeder, which is larger than that available for the BJ-10ex, is optional, as is a battery pack for mobile use. For more information contact Canon UK free on (0800) 252223.

## HCCS CUTS RAM PRICES

HCCS has announced extensive cuts in prices of memory upgrades for the A3010, A3020 and A4000. The new 4Mb upgrade for the 3010 now costs £149. The A3010 1Mb Ram upgrade drops by £10 to £35, while the A4000/A3020 2Mb Ram upgrade drops to £69.33. Prices include VAT.

Soon to supplement HCCS' micropodules will be an analogue interface (£29), laser Express direct-drive printer controller (£249), a colour composite video output card (£49), high-speed serial interface (£49), Midi controller/sound sampler (£49), Ethernet and scanner interfaces.

A version of the MultiPodule for the A300, A400, A540 and A5000 has also been announced. HCCS is on 091-487 0760 and can be seen at the *Acorn User Spring Show*.

# NOW

DISC PARTITIONS



2 Mb/sec speed barrier broken  
by ICS IDE filing system!

So fast, they're calling it

**WIZZO** (it's magic)

Now also available as a plug-in  
filing system on rom -

**WIZZO4** for the A4, and  
**WIZZO5** for the A5000

LAUNCH PRICE ONLY £29

MULTI-LEVEL  
PASSWORD  
PROTECTION

# AFFORD

## PRICE CUTS

on all ideA hard discs

e.g. Archimedes Internal 120 Mb £299

A3000 Series Internal 80 Mb £325

A3000 Series Internal 20 Mb £189

A3000 Series Internal 209 Mb £649

540 Mb IDE Hard Disc £825

**'Phone us for latest prices!**

RISC OS 3  
COMPATIBILITY

# BEST

# ICS

051-625-1006

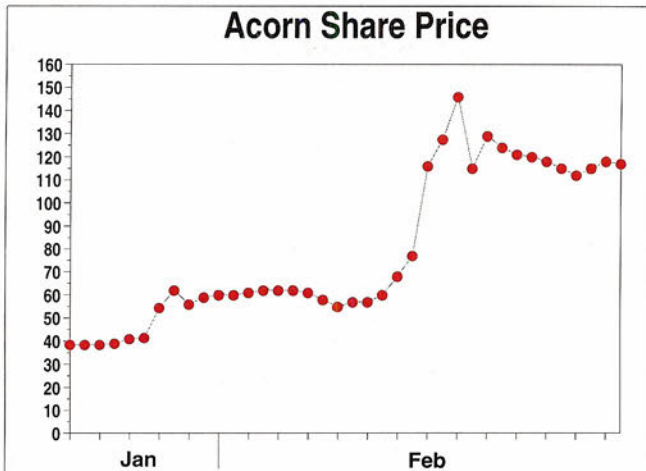
# ACORN SHARES REACH NEW HIGHS

THE ACORN share price continued its dizzying progress during February. The price has settled down to around 115p, but even at this level the price is roughly 40p up on the previous month, a rise of over 50 percent.

Acorn's share price is now no less than three times its value at the start of the new year. However, the investors' enthusiasm for Acorn shares is clearly linked to the company's 46 percent shareholding in Arm Ltd. The value could now be set for further fluctuations as, just a few days prior to *Acorn User's* publication, Arm Ltd was due to announce a small but important investment by a Japanese company.

Acorn's share price first rose sharply after 3DO announced in January that it was to use an Arm60 Risc processor in its new games console. This was closely followed by another announcement, this time from IBM, which endorsed Risc technology and boosted the existing level of interest.

A variety of rumours have circulated since, regarding the sudden rise in Acorn's share price. Acorn's managing director, Sam Wauchope, in an interview with the *The Independent*, refused to discuss rumours that the Japanese electronics giant Matsushita,



38 days of rising share prices

which is backing 3DO, was about to take a stake in Arm Ltd. Wauchope was reported as saying that discussions were underway with various companies. The US telecommunications and electronics group AT&T, an investor in a rival to the Arm chip called the Hobbit, was also rumoured to be interested in Acorn, in which Olivetti has a major shareholding.

So was all the guesswork close? Last month, *Acorn User* predicted that some important Arm Ltd news was imminent. This month the news was revealed as an announcement, scheduled for 9 March, that the Tokyo-based Nippon Investment & Finance Co. Ltd. (NIF) is to take a modest £650,000 stake in Arm

Ltd. NIF's managing director Sadao Kunieda commented: 'We have decided to invest in Arm because it has outstanding technology, matching the current and future trend of downsizing in microprocessors and products using microprocessors.'

He added: 'We believe the company's technology will offer tremendous business possibilities.'

Arm Ltd's managing director, Robin Saxby, told *Acorn User* that while the investment was small in cash terms, the company had secured a vital strategic partner in Japan.

Arm Ltd will be opening up an office in Tokyo to service what they hope will be a number of new Japanese customers for Arm technology.

## PANASONIC HUSHES UP

THE latest in Panasonic's QuietPrinter range has been unveiled. The KX-P2124 is claimed to be quieter than most laser or inkjet printers.

The price for the KX-P2124 is £395+VAT, and a seven-colour upgrade kit is an optional extra for £45+VAT. Panasonic is on (0344) 853431.



Panasonic's KX-P2124: Quiet as a mouse

## NETSHAKE

AF Electronics' next Econet product *MasonNet* should be ready for an April release date, in time for the Spring Show. Latest timings on machines fitted with *MasonNet* show an overall increase in data rates of 100-250%. Programmer Les Mason says: 'We use the data itself to increase the rate of communication, a standard network will benefit with just two cards installed. A new *Phunle* handshaking protocol has been hardwired into the output stages of a standard network chip to reduce the error rate and thus boost the usable bandwidth and thus the speed of the net.'

Patrick Jacolé

## NEWS IN BRIEF

● Brian Dye of Hewett School in Norwich has produced a set of activity sheets for the Longman Logotron *Numerator* mathematical construction kit application which runs under Risc OS or MicroSoft Windows. *Numerator* (Archimedes price £39+VAT) can be used as a general tool for exploring the fascinating world of numbers using graphics. The activity sheets are available in a book called *Numerator Workcards* free of charge to existing users of *Numerator*. If you are a registered user, contact Longman Logotron on (0223) 425558.

● Vision Six Ltd is to cease trading. Vision Six products will live on at the same address with the same phone and fax numbers under the auspices of W.C.Smith & Associates. The change is described as a move to reduced unnecessary company overheads. Vision Six products include a specialist Archimedes software package used for computer aided structural analysis (Casa). A new Risc OS 3.1 version of the application has now been developed. W.C.Smith can be reached on (0665) 510682.

● In the February News we incorrectly described Soft Rock Software as public domain software specialists. In fact Soft Rock specialises in low-cost software and only some demo releases are actually public domain. If you are not sure if some software you have is public domain or not, always check the copyright notice and any text files accompanying the application.

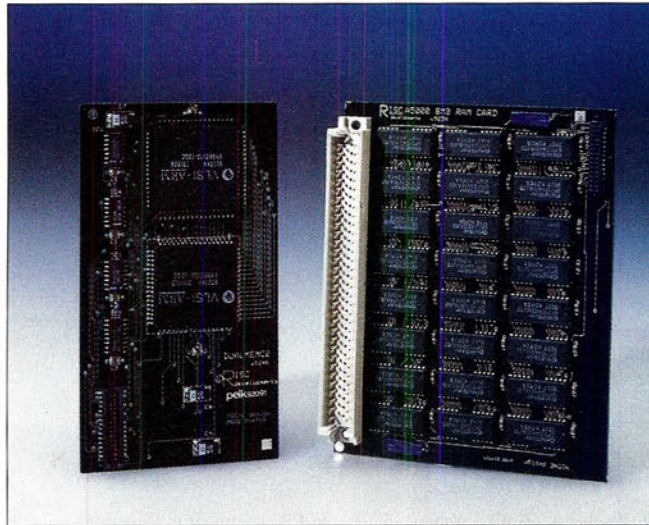
● A new low-cost CD-Rom mastering service is now available from Eesox in Cambridge. An initial CD-Rom produced using an ISO 9660 write-once or Worm method can be reproduced for just £150. Extra copies can be made at around £45 a go. Mark Watson at Eesox points out that you can use the service for simple applications like archiving your hard disc contents to CD-Rom or for creating your own personalised multimedia publications. Jobs can usually be turned around within 24 hours, and Eesox has plenty of experience mastering Acorn format CD-Roms. Eesox can be contacted on (0223) 264242.

## RISC DEVELOPMENTS STEPS OUT

There has been a flurry of activity at Risc Developments over the last month. A new A5000 8Mb Ram card and a range of AUN-compatible Ethernet cards have been launched. Moreover, there was proof that interest in Acorn machines certainly isn't lacking: a Beebug A5000 special offer sold out in two days.

The new Ram upgrade is designed to bring 2Mb or 4Mb A5000s up to a full complement of 8Mb Ram. A5000 owners who already have an earlier 4Mb Risc Developments upgrade can trade in their original for £60. Unfortunately the card must be fitted by an approved Acorn Service Centre (such as Risc Developments' sister company Beebug) for the card to be installed. The cost of upgrading a 2Mb A5000 is £499+VAT and for a 4Mb A5000 it is £429+VAT.

Risc Developments is the latest firm to produce Ethernet interfaces for the Archimedes range. Cards have been developed for the A5000, A3000, A3010 and A3020. 10base2 (Cheapernet) and 10Base5 (Full Ethernet) connections are supported by certain cards. Beebug and Hertfordshire Computer Rep-



Risc Developments' 8Mb upgrade for the A5000

airs have set up a full network installation service which covers the initial planning stage through to card installation and cabling as well as maintenance.

An A3000 and A4000 series card will follow, which will also include a User Port and Analogue port as well as an optional Econet interface. If fitted, the latter will turn an individual machine into a AUN gateway station linking an Ethernet network and an Econet one. Contact Risc Developments on (0727) 840303.

Finally, that Beebug A5000 special offer. Beebug secured around 60 brand new, latest specification A5000s fitted with 2Mb Ram but without a monitor or hard drive. Included was a £200 bundle of assorted software. The asking price was £699+VAT and Beebug sold out two days later, despite minimum publicity.

One draws the conclusion that Acorn should not underestimate the number of non-education customers, who prefer to buy bare machines so they can fit their own choice of hard disc and monitor.

## CC LAUNCHES UPGRADES GALORE

A **FREE** software upgrade for users of Computer Concepts' Colour Card is now available. The upgrade enables the screen refresh rate to be configured to 25Hz instead of the

default 12Hz. This will cause approximately 30 percent extra load on the computer's processor, but the benefit is that noticeable shearing effects on the screen when moving solid

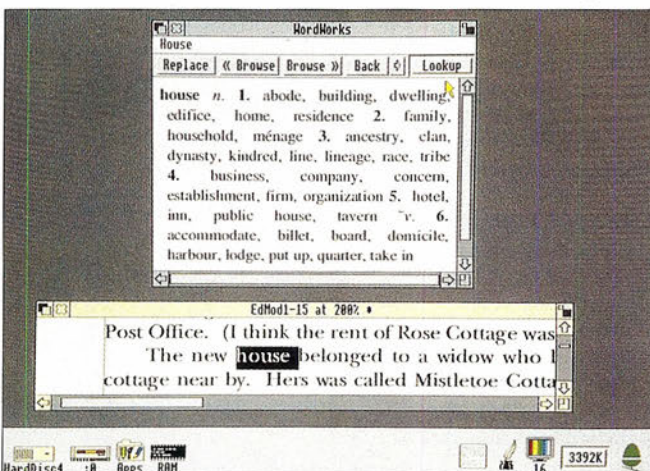
windows around are cured. CC has also introduced a version of the card which can be used via the A3000's external podule interface.

Although we reviewed it last year, CC has only just announced the availability of the answering machine and file transfer enhancements for the FaxPack. These are now standard with all FaxPacks and existing users can obtain the upgrade for free.

There's also a new *Art-Works* Viewer utility which CC is distributing freely to anybody who needs it.

Finally, next month, CC hopes to release its long-awaited *Thesaurus* utility and some video titling software for the Hawk V9 video digitiser.

Computer Concepts can be contacted on (0442) 63933.



CC's new Thesaurus in action, hot linking with Impression

### NEWS IN BRIEF

● From Cumana, news of some improvements to the Acorn/Cumana A5000 CD-Rom multimedia starter kit and the introduction of *EasyPrint* for EasyShare users. The multimedia starter kit, which was devised for education customers in conjunction with Acorn, has gained substantial added value as seven CD-Rom publications are now bundled instead of two.

The new range of titles is made up of the *Revelation 2* painting and image processing package plus a library of colour images, *Space Encyclopedia*, *The Times* and *Sunday Times* sampler, *Illustrated Shakespeare*, *Sherlock Holmes* and the *Illustrated Holy Bible*. A £30 voucher towards an annual subscription for the *The Times* and *Sunday Times* on disc is also included. The whole package, comprising a 4Mb A5000, a multiscan monitor and CD-Rom drive, is priced at £1699+VAT.

● *EasyPrint* is a new utility for sharing printers via Cumana's EasyShare SCSI-based networking system. Documents can be queued to printers connected to other Archimedes in the network and the system is compatible with serial, parallel or laser direct drive printer types.

For further information on *EasyPrint* and the CD-Rom starter kit contact Cumana on (0483) 503121.

● A complete electronics training course, *Alpha-Tracks*, has been devised by Silicon Vision based on its *Arc-PCB* design software in conjunction with the Unilab Alpha System Electronics modules.

The course has been designed for training from Key Stage 3 (students aged 13+). Split into three sections, the course covers the use of Alpha modules to design electronics systems, using *ARC-PCB* software and libraries to design and plot a PCB, and finally assembling and testing of the prototype circuit.

*Alpha-Tracks* is priced at £95 for a site licence, though the *Arc-PCB* software is not included in that price. A demonstration disc is available for £5+VAT.

*Arc-PCB* itself costs £125 single user or £375 for a site licence. For more details contact Silicon Vision on 081-422 3556.

# FOR PEOPLE WHO MEAN BUSINESS

# EUREKA!

Brings the power and innovative features of the very latest in easy-to-use spreadsheet technology to all RISC OS users.

- ▶ Fully integrated charting and graphing, including line, scatter, bar, stacked bar, pie and area.
- ▶ Multiple worksheets with file linking.
- ▶ Powerful worksheet formatting with styles, including cell shading, cell borders with different colours and weights.
- ▶ Picture-style number and text formatting allows full customising of value display.
- ▶ Linear and multiple regression analysis.
- ▶ Import and export of CSV and Lotus 123 formats; export of Draw format.
- ▶ Contains over 150 built-in functions.

Eureka - adfs:IDEDisc4.\$Eureka.Sheets.NatBus

Greyed Total [Icons] [Ready] NUM

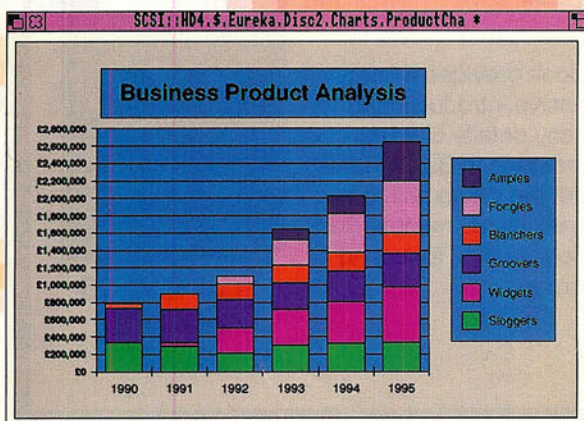
N21 [N14+N17+SUM(N18:N20)]

ads:IDEDisc4.\$Eureka.Sheets.NatBus

**National Business Group**  
Consolidated Balance Sheets

	Fiscal Year End December 31		
	1990	1991	1992
<b>Assets</b>			
Current Assets:			
Cash and Equivalents	£ 15.5	£ 22.9	£ 34.4
Accounts and Notes Receivable	554.9	684.8	800.4
Inventories	680.5	787.0	806.0
Other	165.0	212.3	312.8
<b>Total Current Assets</b>	<b>1,415.9</b>	<b>1,687.0</b>	<b>1,756.6</b>
Property, Plant & Equipment	2,899.2	3,855.1	4,088.7
Accumulated Depreciation	(348.2)	(477.2)	(1,021.1)
<b>Property, Plant &amp; Equip. NET</b>	<b>2,551.1</b>	<b>2,977.9</b>	<b>3,067.6</b>
Land	89.1	103.9	222.5
Goodwill	855.2	1,089.8	1,215.8
Other	108.0	385.1	299.6
<b>Total Assets</b>	<b>4,919.3</b>	<b>6,253.7</b>	<b>6,562.1</b>
<b>Liabilities</b>			
Current Liabilities:			

Eureka offers crisp, accurate business charting in a wide variety of formats.



Eureka's advanced DTP-like publishing capabilities encourage you to create the most impressive reports and budgets, making full use of the Acorn Outline Font Manager.

Build and maintain budgets with speed and accuracy. Using Eureka's powerful range naming features ensures you can always remember what your formulae mean, even months later!

Eureka - SCSI:HD4.\$NewEureka.Sheets.budget1

Normal [Icons] [Ready] NUM

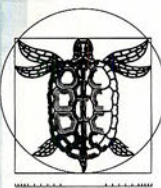
122 [SUM(RCS\_Miscellaneous)]

SCSI:HD4.\$NewEureka.Sheets.budget1

		Budget					
		Qtr1	Qtr2	Qtr3	Qtr4	Total	
Personnel	Total	£28,000.00	£29,000.00	£29,000.00	£29,000.00	£115,000.00	
	Travel	£5,000.00	£5,000.00	£5,000.00	£5,000.00	£20,000.00	
	Chemicals	£1,000.00	£1,400.00	£1,500.00	£1,500.00	£5,400.00	
	Glassware	£1,000.00	£1,000.00	£1,000.00	£1,000.00	£4,000.00	
	Lab Supplies	£2,000.00	£1,000.00	£1,000.00	£1,000.00	£5,000.00	
Supplies	Total	£4,500.00	£3,900.00	£4,000.00	£4,000.00	£16,400.00	
	Large Equipment	£158,500.00	£185,000.00	£80,000.00	£37,000.00	£460,500.00	
	Miscellaneous	£2,000.00	£2,000.00	£2,250.00	£2,500.00	£9,750.00	
Total	Total	£202,500.00	£228,300.00	£104,250.00	£81,500.00	£617,000.00	
	Personnel	£15,000.00	£15,000.00	£15,000.00	£15,000.00	£60,000.00	
Travel	Total	£3,000.00	£3,000.00	£3,000.00	£3,000.00	£12,000.00	
	Chemicals	£3,000.00	£3,000.00	£3,000.00	£3,000.00	£12,000.00	
	Glassware	£2,000.00	£1,000.00	£1,000.00	£1,000.00	£5,000.00	
	Lab Supplies	£500.00	£500.00	£500.00	£500.00	£2,000.00	
	Special Equipment	£5,500.00	£4,500.00	£4,500.00	£4,500.00	£19,000.00	
Supplies	Total	£150,000.00	£20,000.00	£20,000.00	£20,000.00	£210,000.00	
	Large Equipment	£800.00	£800.00	£800.00	£800.00	£3,200.00	
	Miscellaneous	£178,800.00	£27,800.00	£27,800.00	£27,800.00	£263,200.00	

Eureka is priced at £119 + VAT.

For any Acorn computer running RISC OS with 2Mb of RAM or more.  
For further information please ring for a brochure.

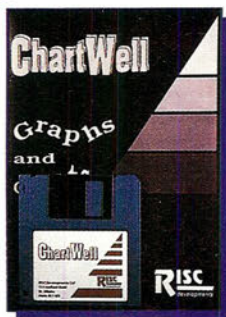


LONGMAN  
LOGOTRON

124 Cambridge Science Park  
Milton Road  
Cambridge CB4 4ZS  
Tel. (0223) 425558  
Fax (0223) 425349

## ChartWell

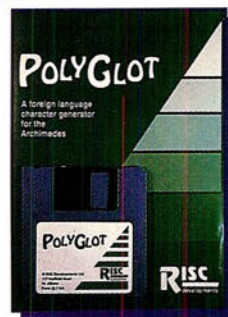
ChartWell is a comprehensive but easy-to-use chart and graph package providing bar charts, pie charts, line graphs, scatter graphs and polar plots with a wide variety of types and many user selectable features. Import data from other files in standard formats; export in Draw file format. Flexible data selection and ordering; useful 'save options' feature.



**£29.95** inc. Vat  
p&p £2.00

## Polyglot

This is a highly flexible package which can be readily customised to the needs of the user. PolyGlOt allows you to access all the characters not normally found on the keyboard from simple user defined windows; ideal for word processing, DTP work etc. in foreign languages. Can also be used for other groups of special symbols (e.g. mathematical). Full printer support.



**£19.95** inc. Vat  
p&p £2.00

## DeskEdit 2

DeskEdit 2 is probably the most comprehensive editor available for the Archimedes with extensive features for editing ASCII text, Basic, C or other programming languages.

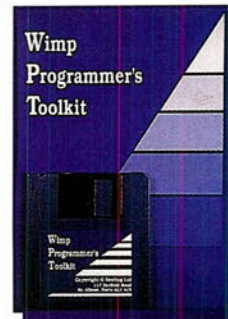
"DeskEdit 2 has far more in the way of text editing facilities and a remarkably comprehensive list of features to support Basic and C programmers - indeed it is difficult to think of anything that could be added" - *Archimedes World, February 1993.*



**£31.95** inc. Vat  
p&p £2.00

## Wimp Programmer's Toolkit

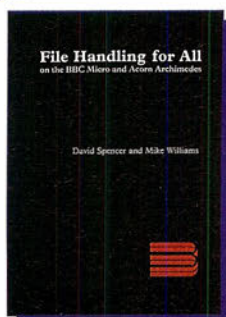
This is a collection of 12 multi-tasking applications to assist in the development and debugging of Wimp programs written in Basic. Ideal companion to the book Wimp Programming for All.



**£19.95** inc. Vat  
p&p £2.00

## File Handling for All by David Spencer and Mike Williams

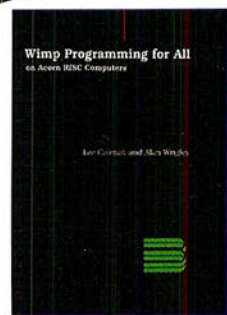
This book covers in some detail all the principles and techniques required to program file handling applications in Basic including sequential files, indexed files, file and record pointers, search and sorting.



Book **£9.95**  
Disc £4.75  
p&p £2.00

## Wimp Programming for All by Lee Calcraft and Alan Wrigley

This book provides a comprehensive introduction to the many details of Wimp programming in Basic, dealing with the Wimp poll loop, windows, icons, menus, file transfers, outline fonts and much more.



Book **£12.95**  
Disc £4.95  
p&p £2.00



## VISIT THE WORLD OF NUMBER

ACORN, in conjunction with Newmedia, has produced four of the National Curriculum Council's *World of Number* titles on CD-Roms. These titles were only available on interactive video discs running with PC equipment.

Number Games, Decimal Points, Picture Gallery and Perspectives have been transferred to Risc OS-compliant CD-Roms and are in the final stages of testing. All four titles are from the Key Stage 3 and 4 series, and include some of the better interactive games. There are also plans to produce the other six titles on CD-Rom.

Local education authorities have just been allocated small amounts of funding to trial the full suite of *World of Number* discs in one primary and one secondary school. Unfortunately



The whole *World of Number* will now be available on CD-Rom

the money had to be spent before March, so only PC-based interactive video systems could be purchased.

The CD-Rom versions will be more accessible to schools

than IV discs in the long term. Pricing has yet to be finalised.

Further details can be obtained from Acorn on (0223) 254254. The CD-Roms will also be at the Acorn User show.

## PLAYTIME FOR NODDY

NEW from The Jumping Bean Company is *Noddy's Playtime*, a unique product aimed at children between the ages of three and seven. The package consists of eight programs, staged into three levels, a complete junior art package, and a novel linking and menu system. The different parts take Noddy through various adventures and tasks.

Down at the Railway, Noddy plays a memory test

involving the Toy Town train, at the Farm Yard the task is to assemble the heads and tails of animal. The Post Office scene involves Noddy sorting out the letters, but the most promising scenario is definitely the Police Station where the player helps Noddy to escape.

Jumping Bean has recently confirmed a place at the BBC Acorn User show, so you can see Noddy there. For more details call (0602) 792838.



Noddy goes out on the toy town, courtesy of Jumping Bean

## EXPAND IT

TEACHERS who have equipped their classrooms with A3020 or A4000 series machines and are lamenting the lack of expansion slots can now buy a solution.

The HCCS Ultimate board fits into the expansion slot but can carry on it up to three micropodules. These are no bigger than a credit card but can hold a digitiser, SCSI interface, laser express, an analogue port (a user port is fitted as standard), Midi in/out, serial port, video out.

The Ultimate board is priced at £35 and HCCS are announcing some starter packs to include the board, power supply and one micropodule. The range of micropodules already available is impressive, but it would be nice to see Ethernet cards, PC cards and scanners in this format.

Podules for the A5000, 400 and 300 series will be able to take two micropodules each enabling you to have eight interfaces on your A5000. The boards can be easily fitted by the user.

For more details on the Ultimate system, contact HCCS on 091-487 0760 or go and see them at the Acorn User show.

### IN BRIEF

● Sherston Software are planning some small changes to their talking books. This will include the ability to save the pictures for use in other packages so that having read the book pupils can write about it.

If you have any other suggestions about small changes that would enhance their use in classrooms, give Sherston a ring on (0666) 840433.

● 4Mation has produced a Risc OS version of *Granny's Garden*. I needed some convincing that this was worth doing but the graphics are wonderful, especially the baby dragons in their nappies, one on a pogo stick. It's nearly as good as having a brand new piece of software, even if I did know all the answers.

There is a *Granny Resource Pack* available containing a set of Draw files and sheets that can be photocopied. The files come in a compressed format and the compression utility can also be used to shrink your own Draw files for loading into other 4mation products and for saving disc space. Details from 4mation on (0271) 25353.

● Historians in both the primary and secondary sector might like to have a look at ESM's new version of its *Time Traveller* software.

Completely rewritten for Risc OS machines it offers pupils the chance to explore time lines and historical events. ESM has produced packs for Key Stages 2 and 3 that are closely allied to the History core study modules such as Britain since the 1930s, Victorian England and Medieval realms.

Packs of printed material are available and the software itself contains quantities of text and picture information about themes such as people, politics, industry and trade.

You can build your own time lines and other core topics are being considered by ESM. Priced at around £30 these packs are worth investigating. For more details, contact ESM on (0223) 65445.

Clare Johnson  
Bexley AEC

# RISC Developments' Hardware



## Ethernet Network Cards

A range of fast Ethernet cards for Acorn computers to be used in conjunction with Acorn's new AUN network software. Together they provide an excellent network system running many times faster than Econet, but still fully Econet compatible. Three types of card are available:

- Archimedes / A5000 card which fits in a single expansion slot.**
- A3000 / A3010 / A3020 / A4000 card which fits in the mini expansion socket.**
- A3020 / A4000 card which fits in the new internal network socket.**

All the cards provide connection to standard 10Base2 Thin-wire Ethernet, and the Archimedes/A5000 card also includes an AUI connector for other network types. As well as supplying Ethernet cards, RISC Developments can arrange a complete networking service from design through to supply, installation and maintenance. Please contact us with your requirements.

4600e	Archimedes/A5000 Ethernet Card	£139
	Half Width Expansion Card	
4601e	A3000 series/A4000 Ethernet Card	£139
	Mini Expansion Card	
4602e	A3020/A4000 Ethernet Card	£159
	Internal Network Card	



## Spectra Colour Scanner

Spectra is a revolution in colour scanning systems for the Acorn range of computers. Its clever design means that it is

as simple as you could possibly want and yet as powerful as you will ever need, producing professional results every time. It is a flat-bed scanner, which means that you simply lay your original under the scanner, load the program and 'click' on Scan. The scanner will then do the rest, scanning in 16 million colours. The result is a sprite that can be in full colour, 256 grey-scale or mono depending upon your requirements. This is a full multitasking application and so you can continue using the computer even while it is scanning. The Spectra kits include the scanner itself, an interface card, user guides, software and everything else you need. Versions are available for the Archimedes & A5000, A3000 (External) and A3010, A3020 & A4000 internal.

0118g	Archimedes or A5000	£549
0119g	A3000 internal	£549
0117g	A3000 external	£569



## A5000 8Mbyte RAM Card

A new card that upgrades the total RAM of the A5000 to a massive 8Mbytes which is ideal for running a number of today's sophisticated applications together. Versions are available for 2Mbyte and 4Mbyte standard A5000s. Owners of 2Mbyte machines already upgraded to 4Mbyte will need to remove the existing RAM Card, and we will offer a £50 refund if this is a RISC Developments or Acorn model. Please note that because of the nature of this upgrade, it must be fitted by an Acorn approved surface mount service centre. There is no fitting charge when carried out by our own engineers.

0147g	A5000 2->8Mbyte upgrade	£499
0148g	A5000 4->8Mbyte upgrade	£429



## A3000 / A3010 / A3020 User Port, Analogue and Econet Card

A unique expansion card that provides a BBC-compatible User Port and Analogue converter together with an optional Econet interface all on one board. As well as the price advantage over separate User Port and Econet cards, this board provides a boot ROM to allow Econet to be used with AUN without loading modules from disc. Other possibilities include fitting both Econet and Ethernet interfaces to the A3020 or A4000, allowing them to act as AUN Gateway stations.

4610e	User Port and Analogue Card	£44.95
4611e	User Port, Analogue and Econet Card	£79.95



**RISC Developments Ltd.**

117 Hatfield Road, St. Albans, Herts. AL1 4JS Tel. (0727) 840303 Fax. (0727) 860263

Educational discounts are available on all products. All prices exclude VAT.

CE, EC, VAT for items marked 'e' and 'g'. VAT for items marked 'g'.



## ARTWORKS INVITES COMPETITION

**NO SOONER** has *ArtWorks* been launched than version 1.10 comes along. Like all of Computer Concepts' programs, *ArtWorks* is under constant development to iron out bugs and add new features.

The main improvement is the addition of a full-screen preview facility, allowing any *ArtWorks* file to be displayed approximately as it would appear in hard-copy form. If the machine running *ArtWorks* has a Computer Concepts Colour Card fitted, this is automatically detected, and *ArtWorks* uses one of the 15-bit colour screen modes.

Combining the effect of dithering with the 32,000 possible colours means you get a picture that is virtually indistinguishable from one produced using 24-bit display hardware. CCs' Charles Moir says: 'The quality improvement is as great as the difference between 16-colour and 256-colour modes.'

*ArtWorks*' anti-aliasing display algorithm can also be

used in the 15-bit colour preview mode to produce smooth lines and curves.

As well as the preview mode, a number of enhancements have been incorporated into *ArtWorks* 1.10, including facilities for colouring grey-scale sprites, displaying scanned sprites at half intensity to make tracing easier, and the editing of sprite palettes.

*ArtWorks* 1.10 will be available in the first quarter of 1993, and is available free to all existing registered users. Upgrades can be obtained simply by contacting Computer Concepts and quoting your serial number.

Although the package comes with a number of discs of high-quality artwork, Computer Concepts is keen to expand the library to cover all kinds of topics/areas. Similar programs on other computers have vast libraries of clip-art supplied on CD-Rom.

An *ArtWorks* clip-art competition has therefore been launched by Computer

Concepts to increase its library. Any drawings can be entered, providing that they have been done using *ArtWorks*, and they are original works. There is no limit to the number of entries per person.

The closing date is 30 April 1993, after which a panel of judges will decide on the winners, taking into account creativity, imagination and technical skill.

The first prize winner will receive a top-of-the-range Canon BJC800; a 360dpi, A3, inkjet colour printer worth more than £1800. Further prizes of £100 vouchers redeemable against Computer Concepts products will go to the runners-up and £10 vouchers will go to anyone whose drawing is chosen for inclusion in the library.

For further information on *ArtWorks* and entry forms for the competition, contact Computer Concepts Ltd, Gaddesden Place, Hemel Hempstead, Herts HP2 6EX. Tel: (0442) 63933.

### NEWS IN BRIEF

● 4Mation has refined its *Noot* graphics system to allow the package to animate anti-aliased Draw files.

The first program to make use of this feature is the long-awaited 32-bit version of *Granny's Garden*, one of the most popular educational programs for the original BBC micro.

Future versions of *Noot* will incorporate the anti-aliased animation, and further products that make use of it will be launched soon by 4Mation. Further details can be obtained from 4Mation, 14 Castle Park Road, Barnstaple, Devon EX32 8PA. Tel: (0271) 25353.

● Because I get a lot of pictures from *Illusionist* users (see this month's prize-winning picture), I thought it might be useful to carry out a small survey as to what readers consider to be their favourite art package on the Archimedes.

Obviously, some programs cover areas that others don't, such as *Euclid* against *ArtWorks*, but it would be interesting to see what comes out on top.

If you're a hardened *ProArtisan* user or even a dedicated *Paint* fan, please let me know. A chart of the top 10 packages will appear in this column soon, so get voting now. Send your votes to the usual address or via the Arcade bulletin board (user no. 1144).

● Send in your ideas, news or graphics. You can contact the Graphics Page by writing to: Rob Miller, The Graphics Page, BBC Acorn User, 101 Bayham Street, London NW1 0AG, or by modem via Arcade BBS user #1144. Arcade is on 081-654 2212 or 081-655 4412.

If you are using Arcade, please keep your communications to just messages. Any large files such as pictures should be sent on disc to the BBC Acorn User address above.

Don't let that dissuade you from sending in graphics, though; you can win a valuable cash prize. This month's picture is from Mark Skilling, 64 The Ridgeway, Southborough, Tunbridge Wells, Kent TN4 0AE, who will be receiving £10.

## X-RAY SPEX

**HAVE** you ever wanted the chance to try your hand at a bit of interior design, or to recreate your favourite Roman ruin? Well now you can, courtesy of *Spex* from ExpLAN.

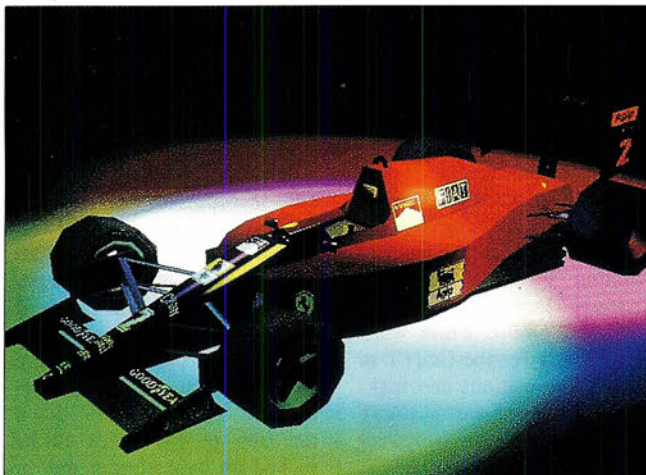
*Spex* is billed as 3D Environment Design Software, and it allows you to place pre-drawn items on a plan view of a room which is projected as an isometric perspective.

The basic *Spex* package comes with graphics for four types of room; kitchen, bathroom, bedroom, and lounge. Additional discs will include such topics as gardens, theatres and classrooms. A special developers' pack will also be released.

*Spex* will be released in Spring '93 and will retail at £89.95+VAT for secondary schools and £49.95+VAT for primary schools. Both packages include a site licence.

Further details on *Spex* can be obtained from ExpLAN on (0822) 613868.

## PICTURE OF THE MONTH



**THIS** month's prize artwork is a rather stunning picture of a Formula One racing car – Nigel Mansell's old Ferrari, in fact – and it just goes to show what sort of results you can get out of art packages with a little time and patience.

The car was created by Mark Skilling from Tunbridge Wells, using the ever-popular *Illusionist* from Clares, and it

makes excellent use of the mapping facility that allows the user to wrap two-dimensional sprites on to solid objects.

All the logos and graphics on the car were drawn using *Revelation* and were then imported into *Illusionist*. The final image was then rendered in Mode 28 to ensure that the dithering looked effective.



## FRIENDLY CYCLONE HITS NORWICH

**NORWICH** is a fine city, interesting not only for its atmosphere and architecture, but also for its several Archimedes bulletin boards. Cyclone BBS, run by Chris Reeve, started out in 1989 and ran for two years on a BBC Master before Chris met up with programmer Keith Marlow and was introduced to the Archimedes.

Keith develops BBS software for the Archimedes, and Chris has let Cyclone become a willing test-bed. Cyclone now runs on an A3000 with a 100Mb hard disc and USR dual-standard 16k8 HST modem. Keith Marlow's BBS software is called *Archiboard*, now available commercially.

Cyclone offers a number of special interest areas, including a radio and TV magazine area called MegaHertz. This caters for enthusiasts in domestic broadcast output and hospital radio with a news and information section. There's also a section for amateur radio operators and scanner



Getting through to Cyclone

owners. Satellite broadcasting and many other topics varying from packet radio to jokes are covered in the FidoNet message areas.

Cyclone has an Acorn Support Area, and is connected to most of the FidoNet Archimedes message echoes. There are 12 Archimedes and four BBC file download areas. Cyclone is not currently spon-

sored or supported by any commercial interests, so regular users are invited to make a donation. This is certainly worthwhile, since even a donation of just £5 each from 20 users will pay the phone bill for a year.

Cyclone BBS is online 24 hours a day on (0603) 260973 at speeds from v21-v32bis and 16k8HST 8N1.

## NEWS IN BRIEF

● Lanark BBS, recently opened by sysop John Wilson at Earnock High School in Hamilton, has been set up to support education users in the Strathclyde area.

John is especially keen to feature file downloads of programs and material for the BBC micro family. Lanark runs ARCbbs software on an A5000 with internal 40Mb IDE disc and an external SCSI 105Mb hard drive.

The A5000 will form part of the school's Nexus and Econet networks. Lanark BBS is part of the FidoNet system at node 2:259/44 and runs 24 hours a day at speeds from 300 to 14,400 bps V42bis 8N1 on (0698) 285838.

● MicroFido is the name coined by developer Paul Welbank for his easy-to-set-up school FidoNet kit. The Fido-on-a-floppy PD software package enables any school to participate in the extensive SchoolNet messaging system with a minimum of equipment; an Acorn 32-bit computer with floppy drive, serial port and modem.

Full details of the package can be obtained by logging on to StarNet, the Host system at Eaton School, on (0603) 507216 8N1 300-2400, or by writing to Paul at: Eaton School, Eaton Road, Norwich NR4 6PP.

● Pace Micro Communications has announced its top-of-range modem, the Linnet 32Plus. As the name suggests, it supports data rates from V21 (300bps) to V32bis (14,400bps) including the V23 (1200/75bps) Viewdata standard.

The Linnet 32Plus also features V42 error correction, with both V42bis and MNP5 data compression, and a system of built-in help pages. The retail price of £499 + VAT makes the BABT-approved Pace Linnet 32Plus very good value, and the company may be willing to consider discounts to sysops. Look out, US Robotics...

● YOU can contact me with any news or information you'd like to be included by writing to: David Dade, BBC Acorn User, 101 Bayham Street, London NW1 0AG or get in contact by modem on Arcade BBS, User #2 - 081-654 2212 or 081-655 4412

## TERBO WARS HOT UP

**SOME** modem manufacturers are getting understandably impatient waiting for the CCITT to come to a decision and ratify the forthcoming V.FAST high speed PSTN standard. The technology for the expected speed of 28,800bps duplex is tested, ready and waiting.

In the meantime, a consortium of 18 companies including Dataflex, Multitech and Nokia are planning to introduce an interim 'standard' running at 19,200bps, which the consortium is calling 'V.32terbo' (sic).

This 'jumping-the-gun' is exactly what has happened in previous cases when decisions on lower speed standards were still to be finalised by the CCITT.

Although it may seem chancy to go forward with a standard that may need to be changed at the last minute, the design of modern hardware usually means that it is mostly the operating software that determines how the new standard will operate in practice.

Some manufacturers, Multitech for example, are already offering firmware upgrades that you can simply download from the company's support bulletin board and immediately install using flash memory technology.

Other modem industry players are refusing to be swayed by all the hype surrounding V.FAST. They are ignoring letters from the V.32terbo group, while waiting patiently for the CCITT to end its deliberations and making sure they have V.FAST products ready in the wings for instant release.

US Robotics has said that the newest dual-standard Courier modem will be upgradable to V.FAST. While dismissing the V.32terbo group as a sideshow, the company has nevertheless announced its own proprietary high-speed standard, called HSTbis which will itself run at 28,800bps. Let the battle commence!

## VIDEO STAR

British Telecom's new Relate 2000 videophone was shown at the BETT show, and offers the user full-motion video and sound over a normal telephone line at standard phone charges.

The BT videophone looks much like a standard phone, but incorporates a compact fold-down 3in colour LCD screen and CCD camera. The picture moves at 10 frames per second, and by the use of clever coding and compression, both voice and picture signals are transmitted in Marconi M-VTS standard down the line at 14,400bps to be picked up by a similar unit at the other end.

The transmission of pictures is entirely optional, as calls always start out as voice-only, and the telephone can be used in the normal way with all the usual tone-dialling features.

So how long will it take before we are making calls to a videophone bulletin board? Remember, you saw it first in *Acorn User*.

# ULTIMATE EXPANSION SYSTEM

## Laser Express MicroPodule

The Laser Express MicroPodule is the latest product in the Ultimate Expansion System.

Laser Express is a direct drive laser printer controller for the Canon LBP-4.

Laser Express, as with other direct drive laser printer cards, gives fast and efficient control of the Canon LBP-4 at up to 600DPI.

Laser Express, unlike other Direct drive laser printer cards, is in the form of a MicroPodule. When used in conjunction with the Ultimate MultiPodule it is the only direct drive laser printer card for the new Acorn range. (A3010/A3020/A4000)

**Price £249.00**

Deliveries start April 1993

# HiVISION digitiser

HiVision is a real time 508 line colour video digitiser which, using Vision's advanced technology, produces high resolution monochrome and colour sprites. All existing Vision users can upgrade their Mono or Colour digitisers to HiVision. Please telephone with Vision serial number for upgrade cost. HiVision is now also available as a MicroPodule for the Ultimate Expansion System. Free HiVision Demo Discs are available on request from HCCS.



A3000/A3010/A3020/A4000

HiVision Internal £129.00

A3000

HiVision External £149.00

Archimedes A300/A400/A5000

HiVision Internal £129.00

Ultimate Expansion System

HiVision MicroPodule £129.00

A3010 £35.00 inc VAT  
1Mb RAM Upgrade

A3010 £149.00 inc VAT  
4Mb RAM Upgrade

**Wise  
add-ons**

A3020 £59.00 exc VAT  
2Mb RAM Upgrade

A4000 £59.00 exc VAT  
2Mb RAM Upgrade

## PRODUCTS

### A3000

#### Hard Disc Drives

100Mb External	£479.00
200Mb External	£889.00
HardCard100	£429.00
20Mb IDE Internal	
with User Port	£199.00
60Mb IDE Internal	
with User Port	£329.00

#### Memory Upgrades

1Mb RAM	£39.00
4Mb RAM	£129.00

#### Expansion

Econet	£39.00
Serial Upgrade	£17.50
User/Analogue Podule	£39.00
Podule Case	£15.00

#### Video Digitisers

Mono Vision Internal	£49.00
Colour Vision Internal	£79.00
Colour HiVision Internal	£129.00
Mono Vision External	£62.00
Colour Vision External	£92.00
Colour HiVision External	£142.00

#### Ultimate Expansion System

MultiPodule	£39.00
-------------	--------

### A5000/400/300

#### Hard Disc Drives

100Mb Internal SCSI	£369.00
200Mb Internal SCSI	£779.00
20Mb Internal IDE	£199.00
60Mb Internal IDE	£329.00

#### Memory Upgrades

1Mb RAM for A400	£45.00
2Mb RAM for A5000	£77.00

#### Expansion

Econet	£39.00
--------	--------

#### Video Digitisers

Mono Vision	£49.00
Colour Vision	£79.00
Colour HiVision	£129.00

#### Ultimate Expansion System

MultiPodule	£39.00
-------------	--------

### A3010

#### Hard Drives

20Mb IDE	£194.89
60Mb IDE	£331.06

#### Memory Upgrade

1Mb RAM	£29.79
4Mb RAM	£126.81

#### Ultimate Expansion System

Multipodule	£41.70
Multipodule+20Mb+PSU	£271.49
PSU+Fan+Buffer Kit	£30.00
20Mb for Multipodule	£220.43

### A3020/4000

#### Memory Upgrade

2Mb RAM	£59.00
---------	--------

#### Expansion

Econet	£39.00
--------	--------

#### Multipodule

with User Port	£39.00
PSU+Fan+Buffer Kit	£30.00

#### Micropodules for Ultimate

Laser Express	£249.00
Colour Vision	£79.00
Colour HiVision	£129.00
SCSI, with CDFS	£99.00
Analogue	£29.00
Colour Video Out	£49.00
Serial	£49.00
MIDI	£49.00

HCCS products available from all good Dealers

This is a small selection of our product range, please ask for full details

HCCS ASSOCIATES LIMITED,  
575-583 DURHAM ROAD  
GATESHEAD,

TYNE AND WEAR. NE9 5JJ.

Tel: (091) 4870760

Fax: (091) 4910431

All prices excluding VAT. E&OE.  
Carriage FREE for UK Mainland Only

# INTRODUCING THE NEW

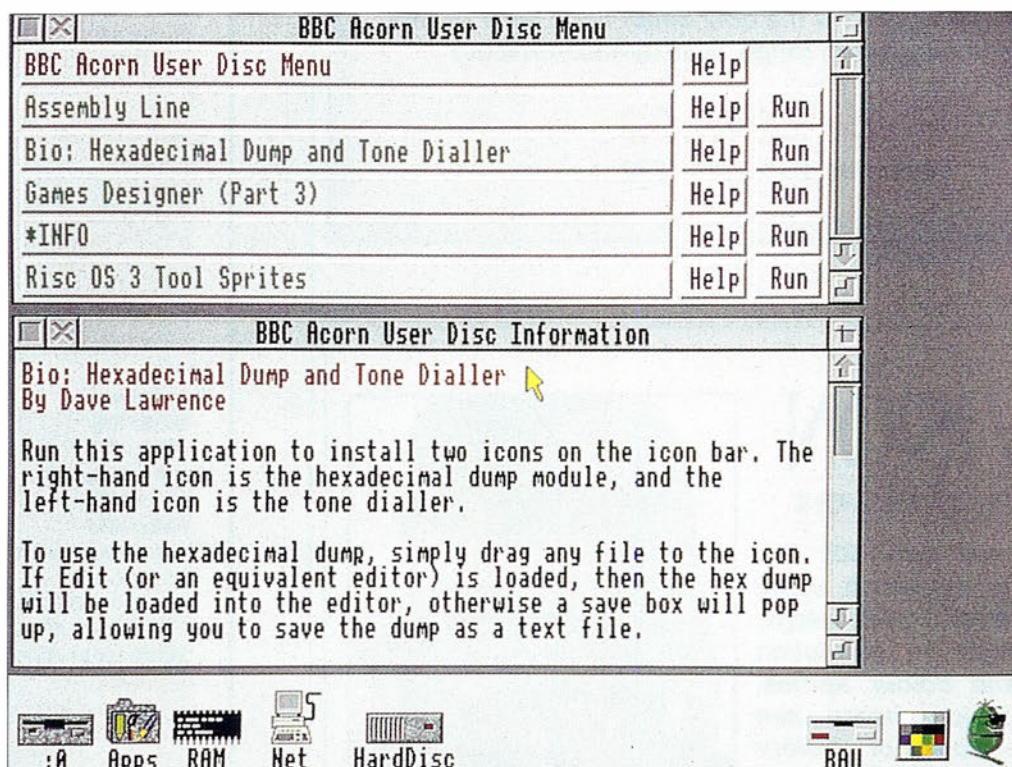
The Acorn User magazine disc: it's not just a pretty face,

The *Acorn User* disc is dead! Long live the *Acorn User* disc! As from this month, the 3.5in *Acorn User* magazine disc is different. Gone is the old combined Compact and Archimedes disc: there's now a disc exclusively for each machine. And they're still totally free to subscribers.

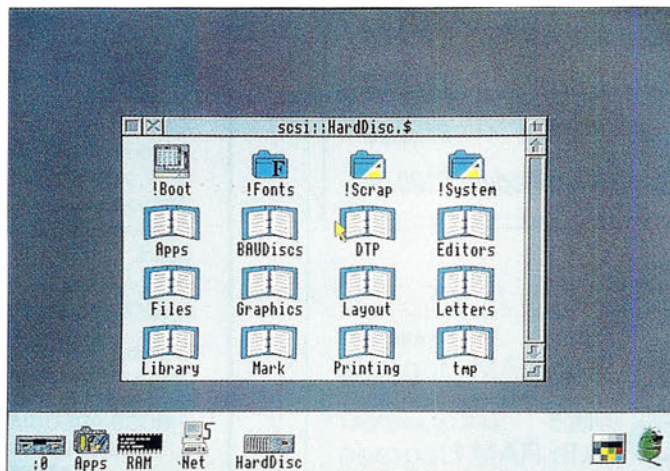
On the Archimedes disc there's now an easy-to-use multi-tasking menu program, which displays helpful advice for everything on the disc. Take too long to understand your magazine disc? Now you can just pop it in and go...

All the programs from the yellow pages are included on the disc, along with instructions for use. And, to cap it all, there are bonus programs and surprise extras every month.

● To subscribe to BBC Acorn User and receive your free magazine disc, complete the form opposite and send it with your payment to Acorn User, 5 Westminster Court, Hipley Street, Old Woking, Surrey GU24 9LG, or ring (0483) 727762. You can also order back issues and magazine binders, to hold a whole year's issues, using the same form.



No more messing around with complicated directory structures: it's the disc menu to end all disc menus



Our bonus icon and tool sets will make your desktop look the bizz

## THE MASTER COMPACT

Calling all Compact owners! The 3.5in magazine disc is now formatted using Archimedes E format and, as a result, will no longer work on your machine. To ensure that you receive the Master Compact version of the magazine disc, every month, please send your address details to:

Master Compact Disc  
BBC Acorn User  
Redwood Publishing  
101 Bayham Street  
London NW1 0AG  
Tel: 071-331 8000

# ACORN USER DISC

it's also an indispensable companion to your favourite Acorn magazine

## DISC CONTENTS



### THE ACORN USER DISC MENU

Exceptionally easy to use, this multitasking disc menu system makes it child's play to get the best from the new look *Acorn User* magazine disc.



### ASSEMBLY LINE

All the programs from our Assembly Line feature on page 85 which, this month, takes a look at recursion in Arm code. There are five programs in all; two Basic programs and their Arm code equivalents, and a macro to aid in debugging your own source code.



### BIO LOGICALLY

The complete and ready-to-run *Bio* application, with two new modules. *HexDump* creates hexadecimal dumps of files, while *ToneDial* allows you to dial numbers from the desktop down your phone; look, no hands! *Bio* is *Acorn User's* own modular file processing system, which we will be adding to on a regular basis. See page 79 for more details.



### MOVING TARGETS

This month the games designer suite expands into new realms with an enhanced alien movement editor and a complete landscape scenery editor. All the editors presented so far are included on the disc, along with the data files necessary to run them. Next month the series will reach a climax, with a complete game for you to play and understand. Turn to page 82 for this month's installment



### \*INFO

A veritable bubbling pot of variety and originality, combining strange attractors and wacky one-liners with seriously useful applications. Full details of all these programs found on page 69. Astound your friends! Amaze your relatives! And all at the click of a mouse button...



### DESKTOP TOOL ICONS

It's Big Bonus time: 19 sets of tool icons for customising the appearance of your desktop windows, ranging from the beautiful to the downright peculiar; six sets of icon sprites for altering – among other things – the icon bar; and two backdrop sprites for making your Pinboard that little bit more interesting. These are guaranteed to contain something for everyone, they're great fun, and they're all free!

## BBC ACORN USER ORDER FORM

Name.....

Address.....

Postcode.....

Signature.....

Please tick if you are taking out:

- ☐ A new subscription  
☐ A renewal of a current subscription

## SUBSCRIPTION OFFER

AUH

	Mag only	Arc disc	Compact	5.25in disc
UK	N/A	<input type="checkbox"/> £22.95	<input type="checkbox"/> £22.95	<input type="checkbox"/> £22.95
Mainland Europe	<input type="checkbox"/> £35	<input type="checkbox"/> £49	<input type="checkbox"/> £49	<input type="checkbox"/> £44
Rest of World	<input type="checkbox"/> £45	<input type="checkbox"/> £69	<input type="checkbox"/> £69	<input type="checkbox"/> £64

## BINDER OFFER

☐ Please send me..... binders at £5.95 each

## BACK ISSUES/DISCS OFFER

Month.....Year ☐ 1991 ☐ 1992 ☐ 1993

Magazine ☐ £1.95

Discs ☐ £5.95 (Arc) ☐ £5.95 (Compact) ☐ £4.95 (5.25in)

Overseas orders add £1 (Europe) and £3 (rest of the World)

I enclose a cheque/PO (made payable to Redwood Publishing Ltd) for a total of £.....

Access/Visa card no..... Exp date.....

# SCAN THIS.



**A quality colour scanner package for the price of a black and white one.**

Scanner shown is the new GT-6500 with optional transparency adaptor. Desktop version of ChangeFSI supplied with scanner packages. Scanned image editing software is available to allow colour balance to be changed, image mixing and titling, cropping carried out, file format conversion etc in the 24 bit domain.

**The new, quality A4 Scanner packages from Irlam Instruments start at just £875 rrp!**

With glorious 24 bit, 16.7 million colour technology, the new Epson GT-6500 and GT-8000 flatbed scanners produce high definition, professional colour images.

Yet they also handle line art and 256 greyscale images (for mono DTP and computer aided design) with equal clarity and verve, with output resolutions of up to 600 dpi on the GT-6500 and 800 dpi on the GT-8000.

With the optional adaptor, 35mm slides, black and white negatives and transparencies up to 5 inches square can be scanned.

The software part of the package is Pro-image which renders, displays and compresses images whilst multi-tasking with other applications.

Developed over several years Pro-image supports the widest range of the file formats including sprites with up to 256 colours or 256 grey levels with Clear and industry standard compressed TIFF and JPEG 24 bit files.

So to p-p-pick up this scandalously good offer call 0895 811401 now.



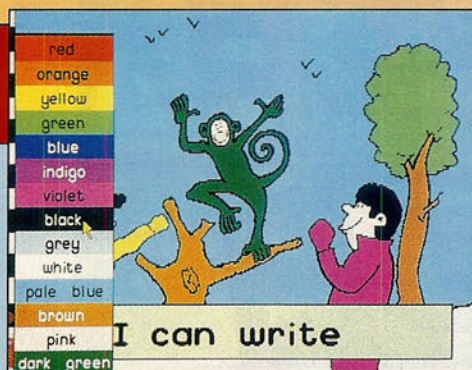
**Irlam Instruments Limited, Brunel Institute for Bioengineering,  
Brunel University, Uxbridge, Middlesex, UB8 3PH, Telephone 0895 811401**

BBC

The

ACORN USER

## Spring'93



HALL D HARROGATE INTERNATIONAL CENTRE  
15TH, 16TH & 17TH APRIL 1993 10.00 A.M. TO 6.00 P.M.

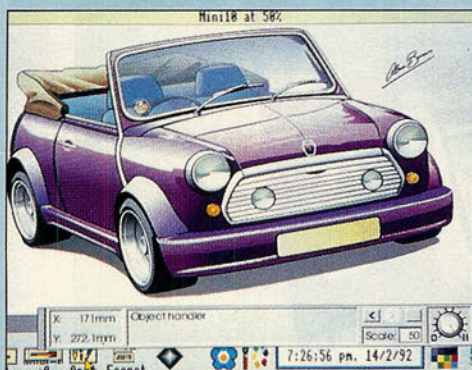
Inspiring new software for students and teachers, covering all areas of education including: Maths, English; foreign languages and talking word processors.

Celebrity visits, Treasure Trail Competition, free show guide, special show offers, low admission rates, free computing advice, school poster competition, surprise attractions.

The Acorn User Spring Show goes to the heart of Britain to bring Acorn expertise to a wider audience. Harrogate, the garden city of the north, is ideally located for easy access by road or rail.

Meet the BBC Acorn User team at our feature stand, for friendly advice, back issues and the perfect opportunity to take out your subscription!

Over 50 exhibitors offer the very latest in educational, professional and leisure technology for the Acorn user. Join the Treasure Trail for your chance to win a bumper pack with prizes from the major exhibitors.



Professionals, will enjoy a superb range of accounting, word processing and graphics software. Look out for scores of bargains and special offers.



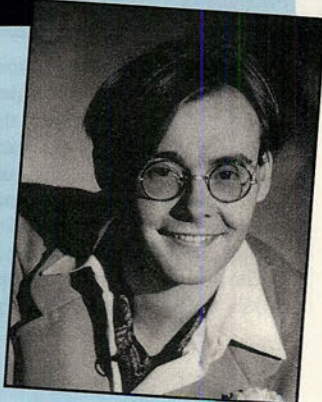
Play the day away on a massive range of challenging games for all levels of skill. Try out brand new titles from 4th Dimension, Krisalis and the latest from Cl.S. Plus surprises from newcomers and familiar names.

**FRIDAY  
16TH  
ONLY**

Your chance to challenge TV's Gamesmaster Host

**DOMINIK  
DIAMOND**

our special guest who will help with competitions, hand out prizes and, of course, sign autographs for eager fans both young and old.



## ADVANCE TICKETS

Please rush me : ☐ Adult £4 (£5 at door) ☐ Under 16 £2 (£2.50 at door)  
☐ Family Tickets £10 (£13 at door) ☐ Under 5's FREE

I enclose a cheque/postal order for £   
made out to: **SAFESELL EXHIBITIONS LTD** or please debit my Mastercard or VISA Card no.

Expiry Date  /

Signature

Name

Address

Please send this application form to:  
**SAFESELL EXHIBITIONS LTD, MARKET HOUSE,  
CROSS ROAD, TADWORTH, SURREY, KT20 5SR**

Visa & Mastercard holders can phone  
**0737 814713** for ticket orders

In the days when radio was still wireless and schools had pianos in the assembly hall, audio-visual sophistication usually meant a scratchy roll of slides and a tape-recorded commentary.

Times have changed. Most secondary schools now own video equipment and may even have a sound studio, and there is a wish to integrate this resource with their computer hardware. Acorn, Apple and Microsoft have all responded with different ways of showing motion video on a computer screen, each aiming for a different cost and quality level.

Replay is Acorn's method for displaying digitised motion video in a Risc OS window. It lets you integrate live action and computer graphics, text and sound in a business presentation, a classroom project or multimedia application.

Hitherto, creating a Replay movie required you to send off your video to a bureau, which digitised and compressed it for a fee of around £100 per minute of video. Now, with two Replay DIY products, you really can do it yourself.

Creating your own Replay movie is a four-stage process. First comes the filming; grab the camcorder and off you go. Then you capture the video on to hard disc, using the Irlam digitiser. Next, with Unique-way's *Empire* software, the digitised video is edited down.

Finally, the edited 'film' is compressed into a Replay file using Acorn's 'moving lines' software. It can be viewed with the usual *ARPlayer* front end, or incorporated into something like a *Magpie* or *Genesis* presentation.

Each of the clips can be filmed separately and edited together later. All you need is an ordinary camcorder.

### IRLAM'S REPLAY DIY

The Irlam Replay DIY expansion card is a standard, single-width podule which fits in the normal way to any A5000 or A540 with 2Mb or more of memory. Only these are certain to work, since they have the requisite speed that earlier Arcs, the A400 and A300-series machines, lack, even when upgraded to an Arm3. The latest family of Arm250 machines, the A3010, A3020

# FOUR OF A KIND

We check out four of the best new Acorn products, including the kit that lets you make Replay movies yourself

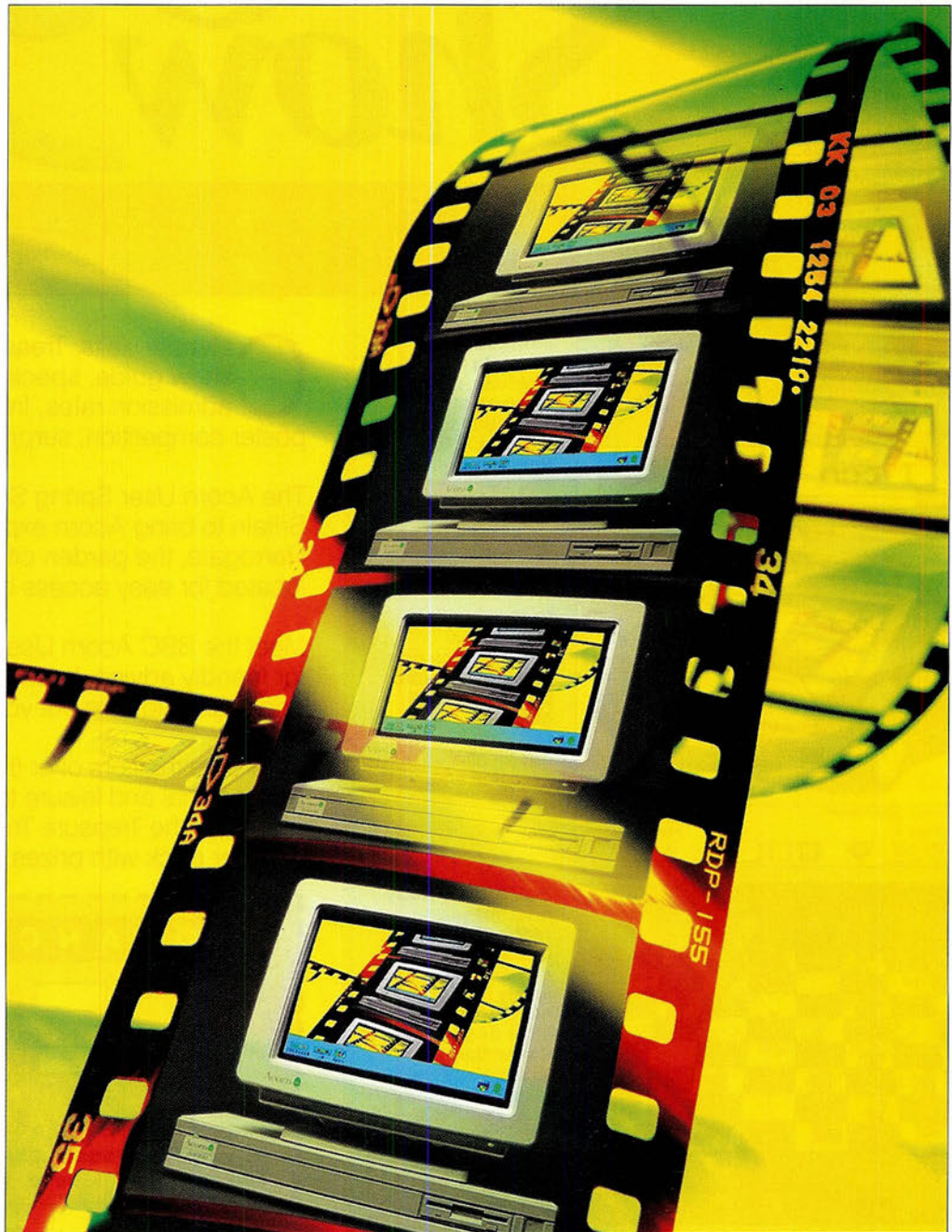


Photo: ROBERT CLIFFORD / Ill: GEORGE SNOW

and A4000, fall short on speed and don't have the standard podule interface either.

The podule is neatly built, and, along the back, has only a BNC connector for video input plus two phono sockets for sound. Once the card is fitted, capturing your filmed scenes on the computer is straightfor-

ward. You put the tape from the camcorder into your video recorder, and connect the video recorder up to the card using the usual PAL aerial output. You can also connect cameras directly, or get video images from Laservision disc.

The Irlam *ReplayDIY* application software runs on the

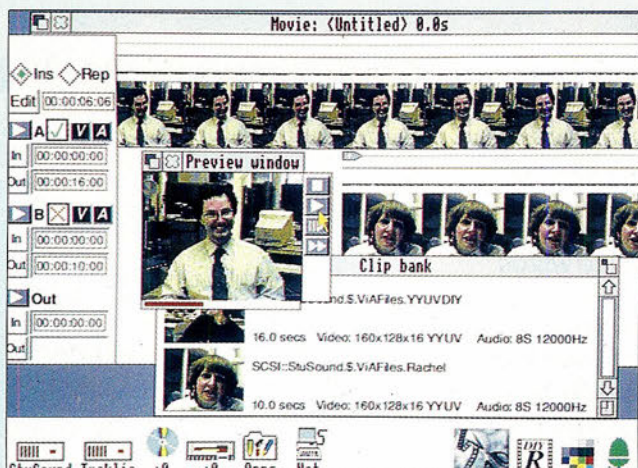
desktop, and produces a window on screen in which you can see your video. This preview is of lowish quality, but it is quite good enough to confirm that you have the right bit of tape, and to cue up what you want to capture.

You can specify how many seconds of the scene you want,

## TWO STEPS FORWARD



Once the video camera is plugged into the Replay board, the computer can record a video sequence. Then, when recording has finished, the clip can be played back, complete with the sound track.



Sequences are edited using the *Empire* package. Films can be shown frame-by-frame, and sections are cut and pasted to create the final movie. *Empire's* ability to show a sequence of individual frames, as if you were looking at a genuine film, is invaluable.

then play it and press the Record button on screen. During recording there is no picture: the hardware on the card captures and digitises the picture and sound data, then it is transferred to the Arc's memory and stored on hard disc 'on the fly'. So the length of video clip you capture isn't limited by the amount of memory you have: all you need is a huge hard disc.

At this stage the data is uncompressed and stored in a new type of VIA file (Video Interleaved with Audio), taking up about 21Mb per minute of video. The quality equates to normal Arm2 Replay, that is 256-colour, 160x128 pixels at 12.5 frames per second.

The Irlam software also allows you to view previously

captured VIA files on screen, and to record and preview sound-only files.

It is likely that a software upgrade will allow 25fps capture in the near future. A separate mini-DIN connector can be added to the card for S-VHS input. This hardware upgrade should offer slightly higher video quality, but will only be useful if your camcorder or video recorder has a direct S-VHS output.

## EDITING

The unexpected bonus of the Replay system is editing. Uniqueway's *Empire* application allows you to perform basic video editing functions on uncompressed VIA files.

The application opens three windows on screen. The 'clip

bank' is rather similar to a filer window, in that it shows the details of any VIA file video clips you select, with a single frame showing the video clip.

The second window shows three movie 'tracks', laid out horizontally like strips of photographic film. The top two are drawn from the clip bank, the bottom is the edited version. You can pick start points (in-cues) and end points (out-cues) for each track, and cut from one track to another at any point, just by dragging around the strips of film, or by dragging cue markers, or by typing in time codes. It is impressively easy.

The third window has video recorder-style control buttons, and can be used to show a video preview of any of the clips, or of the edited version.

Once you've set up your sequence of edits, *Empire* assembles a fully-edited VIA file by copying and joining up sections of your clip bank files in the way you specify. It doesn't destroy the originals, so you can use the same clip over and over again, or re-edit the whole work.

Even this basic editing capability opens up the possibility of making longer and very professional-looking Replay movies, or of compiling a library of video clip-art resources, and so on.

There are as yet no effects, dissolves or wipes available to make a transition from one shot to another. But the software 'hooks' are in place, and special effects are likely to be added as an option in future. It doesn't rival Adobe's *Premiere* for functionality, but neither does it cost £500.

## COMPRESSION

While VIA files require over 20Mb of hard disc space for every minute of captured video, Replay movie files take up about 4 to 5Mb of disc space per minute. Previously, the movies had to be compressed at a service bureau such as Uniqueway. But with DIY Replay, you can do this yourself: Acorn's own compression software will be supplied to convert VIA files into Replay ARMovie files.

Movies work on any Risc OS machine, not just Arm3 machines. But the compression

scheme is asymmetric. Decompression is super-fast, so movies can be loaded and displayed in real time, even from slow media like CD-Roms, and compressing the data is relatively slow. It takes a few minutes for every few seconds of video.

Most Replay clips will total only a few seconds, and could compress in a couple of minutes on a fast Archimedes. But luckily, if you have a long movie to compress, this is a 'fire and forget' operation that can be left running overnight.

Once you've edited together your sequence of clips and created the composite VIA file with *Empire*, you can preview the whole thing within either *ReplayDIY* or *Empire*, then set the compressor going.

Your completed ARMovie file can be played with Acorn's bare-bones *ARPlayer* application, or incorporated into a more ambitious presentation using the Replay-capable versions of *Magpie* or *Genesis*.

Replay DIY should spark ideas in the most jaded student. The whole process is simple and exciting, particularly since it is so immediate. Capturing a few short video clips, editing and putting them into a *Magpie* binder could take less than an afternoon, and without doubt will generate and maintain immense interest in the classroom, or even at home.

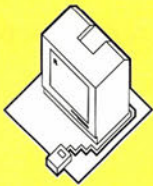
The potential market for *ReplayDIY*, *Empire* and any related products is vast, for the most surprising thing of all is the low cost: Irlam's digitiser card is £250+VAT and the *Empire* editing software is only £75+VAT. Another £50 buys a director's chair from Habitat, and you're ready for 'Action!'

Graham Bell

## PRODUCT DETAILS

**Product:** Replay DIY/Empire  
**Supplier:** Uniqueway/Irlam Instruments, 42 Crwys Road, Cardiff CF2 4NN  
**Tel:** (0222) 644611  
**Price:** Replay DIY - £250  
 Empire - £75

**Product:** Director's chair  
**Supplier:** Habitat  
**Price:** circa £50



ICON TECHNOLOGY LTD

5 JARROM STREET • LEICESTER • LE2 7DH • TEL. 0533 546225

# EasiWriter

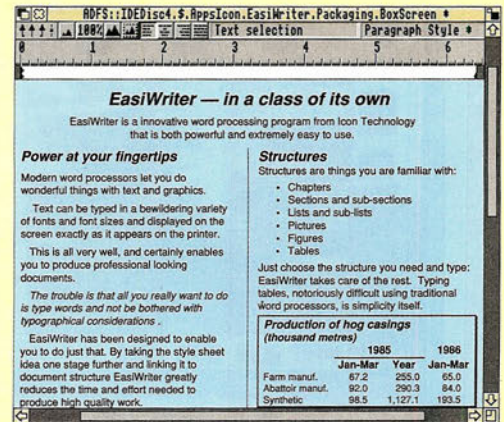
## EasiWriter

Modern word processors let you do wonderful things with text and graphics. Text can be typed in a bewildering variety of fonts and font sizes and displayed on screen exactly as it appears on the printer.

This is all very well, and certainly enables you to produce professional looking documents. The trouble is that all you really want to do is type words and not be bothered with fiddly typographical details.

EasiWriter has been designed to let you do just that. You just choose the sort of structure you want - chapter, section, table etc. - then type the words. What could be simpler? Once you've experienced its capabilities you won't settle for less.

**Price £149**



*"I would recommend EasiWriter as the best RISC OS word processor."*

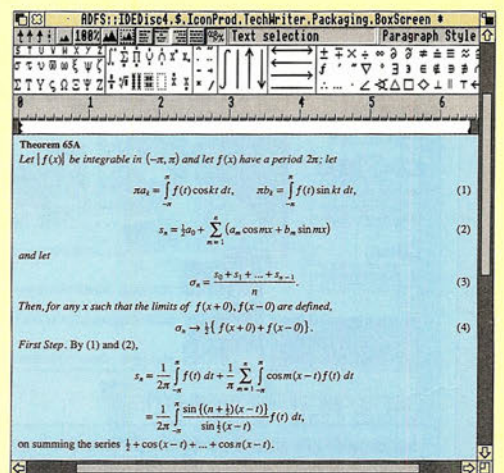
*Archimedes World*

# TechWriter

## TechWriter

Do you ever write documents that contain mathematical equations? If so, then you probably type the words first and add the equations later by hand. And no doubt you often dream of the day when you will be able to type the equations along with the words. Well, now you can stop dreaming because TechWriter has turned the dream into reality. We have taken all the features of EasiWriter and to these we have added a powerful equation editor that automatically applies the rules of mathematical typography on your behalf. All you do is choose the functions and type the symbols. TechWriter does the rest. Use it to produce exam papers, worksheets and technical reports with unrivalled ease. The end results are comparable with the best mathematical typesetters.

**Price £199**



*"Looked on as a complete package for producing technical and academic documents TechWriter is nothing short of excellent."*

*Graham Bell, Acorn User*

# StartWrite

## StartWrite

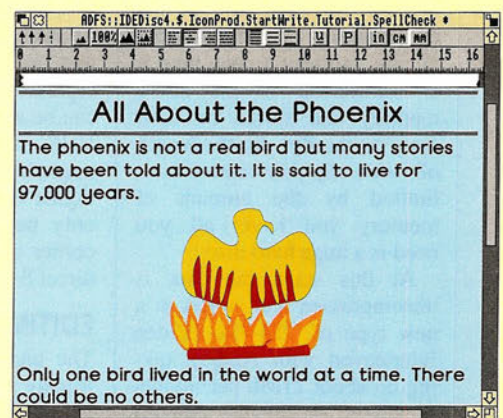
Just for a second, imagine all the plus points of EasiWriter simplified into a new entry-level word processor.

Well, that is precisely what StartWrite is all about. Even the price is scaled down.

There is nothing complex involved, yet StartWrite still outperforms any comparable word processor on the market. As an indication of its potential, it's often impossible to tell whether a document has been created using StartWrite or EasiWriter.

Without doubt, the younger members of your family will find StartWrite an education in itself. What's more, StartWrite represents the perfect stepping stone to EasiWriter and TechWriter.

**Price £69**



For a free brochure, complete and return this coupon.

Name \_\_\_\_\_

Address \_\_\_\_\_

Prices exclude VAT. Call for education prices and site licences. EasiWriter, TechWriter and StartWrite are ideal

## ACORN ADVANCE

**Supplier:** Acorn Computers  
**Tel:** (0223) 254254

**Features:** Word processor, database, spreadsheet, mailmerge, charting

*Advance* is Acorn's new integrated business application: a word processor, spreadsheet, database and graph drawing utility, all in one application.

On the Mac, Apple's *ClarisWorks* integrated package became a best seller. Can *Advance* do the same on the Archimedes?

*Advance* needs Risc OS 3.1, and is certainly happier with 2Mb or 4Mb than one. It has to be carefully installed, particularly on a floppy disc system. And with the domestic-grade

stories. But the essentials of the original remain: word processing with control over typeface, size and other attributes; an as-you-type spelling checker; graphics embedded in the text; and a simple way of setting up single or multi-column page layouts without the bother of master pages.

*Advance*'s spreadsheet is a cut down and redesigned version of *Schema*, which is written by CRM but marketed by Clares. As a beginners' spreadsheet, it's capable. And while it's considerably simplified from the original (the script language has gone), there are a few improvements too: editing the contents of cells is more surefooted now, and rows and columns can be fixed in place to provide a useful way of showing column or row headings.

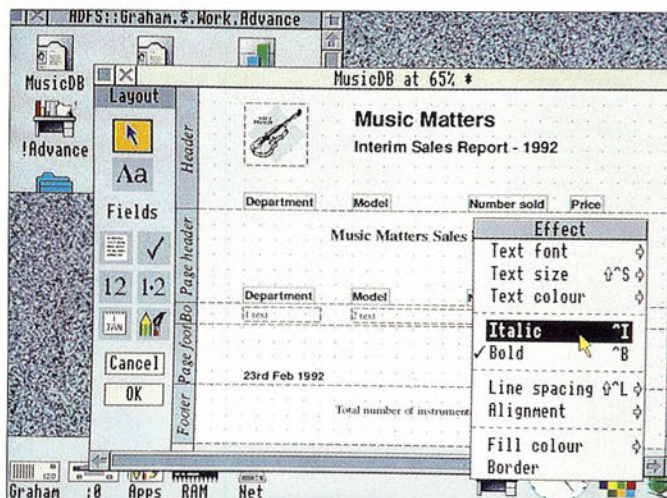
*Advance*'s database is a version of the well-regarded *DataPower*, contributed by Iota. It allows you to develop highly-graphical databases, and can store sprites and drawing files, not just text and numbers. The database designer is easy to use, and for the user that *Advance* is aimed at, it is a good choice. *AdvanceDB* is less modal than most database managers: designing reports is a trivial extension of designing original database layouts, so there is less to learn.

## INTEGRATION

One of the key features a package like this must possess is integration; it has to be easy to move data from one part of the package to another.

This is best exemplified by graphing tables of numbers from the spreadsheet or the database: it is as simple as highlighting an area of the sheet and choosing a menu option. The charting module is not that of *Schema* – which was limited to 2D graphics – but is taken from *DataPower*. You can choose your graph type from a toolbox 'gallery', and directly edit text in axis labels and so on.

The other good example of integration between parts of *Advance* is the new mailmerge



The *Advance* database: a good choice for its intended audience

option in the word processor. A CSV file from either spreadsheet or database can be imported, and the headings from the file merged into the text: it works like *Easiwriter*, and is a big improvement on the mailmerge facilities of the *Impression Business Supplement* – Computer Concepts would be well-advised to add this to *Impression* itself.

Aside from the ability to import *Draw* files and text, that's about it. But as entry-level software, the ease of integrating data from each of the modules is paramount: beginners often expect a single application to do everything, and the Risc OS 'software toolkit' approach has to be

similar, and a number of features will smooth the path for first-time users.

## LOOK AND FEEL

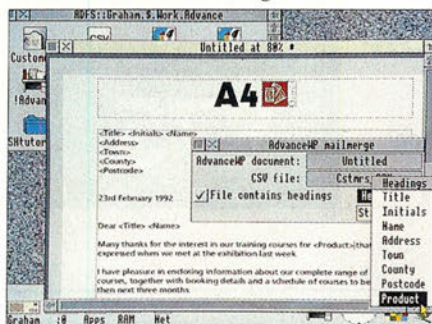
There are some pretty icons, rather at odds with the simple window layouts, and items like the colour picker that appear in each of the applications are consistent. *Impression*'s helpful terminology, distinguishing between effects and styles has been maintained throughout, and to aid beginners, there are Bold and Italic effects in all of the applications.

The action each takes when you close a window has been rationalised too: closing a window closes the document (after a warning), so you can't unwisely build up a list of 20 unsaved letters in memory. For the home or business beginner, *Advance* is a quick way in, and many people won't need to upgrade to grown-up versions of these applications (although don't expect upgrade deals if you do need to). Of course there are limitations –

the modules are not as fully-featured as their parents – but look at what has been left in: spellchecking; loading of Lotus 1-2-3 files; 3D charts and so on. At just under £100, the cost is very reasonable.

This isn't a package for the committed Archimedes fan, but it's well-aimed at beginners. *Advance* is also likely to appeal to users who have only a casual interest in databases and spreadsheets.

Graham Bell



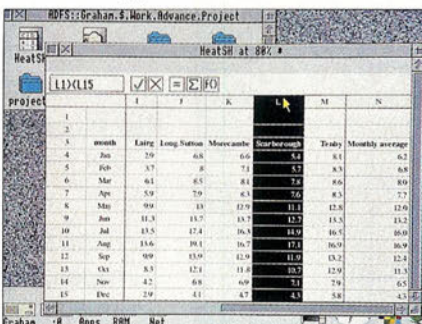
Word processing includes a mailmerge feature

*Advance*, installation is an irrevocable step: the master disc is keyed permanently to a single Archimedes. For schools though, there is a site-licence scheme, as well as special off-site discs that can be un-installed and transferred to another machine.

Once *Advance* is safely installed, double-clicking puts *Advance*'s desk icon at the foot of the screen. This gives access to its four component modules: word processor, spreadsheet, database manager and graphing utility.

## THE MODULES

The word processor is based on Computer Concepts' *Impression Junior*, though with a number of significant changes. One immediately noticeable casualty is CC's 3D-look, ditched in favour of a flat, rather bare approach throughout *Advance*. Anyone used to *Impression* itself will also miss the styles and the ability to create frames, and be surprised to see documents stored as files, not as direc-



The spreadsheet is a capable beginner's tool

learned. The integration isn't as seamless in *Advance* as it is with the best packages of this type – *ClarisWorks* on the Mac for example – and using *Advance* isn't much easier than using four separate packages. Indeed, on a 1Mb or 2Mb Arc, since only one or two of the modules can be loaded at once, it is four separate packages.

Acorn has made an attempt to ensure the four rather disparate applications look

**EMPIRE - The Acorn Replay Movie Editor**

Ins Rep  
Edit 00:00:00:12  
A [X] [V] [A]  
In 00:00:06:18  
Out 00:00:07:05  
B [X] [V] [A]  
In 00:00:00:00  
Out 00:00:30:00  
Out  
In 00:00:00:12  
Out 00:00:00:00

**EMPIRE FEATURES**

- Edit ViA files created by Acorn Replay DIY kit.
- Convert existing Acorn Replay Movies into ViA files.
- Fully context sensitive online Help.
- **Timeline Display.**
  - Film strip display shows sequence of frames in source clips and edited movie sequences.
- **Preview window.**
  - Preview source clips, edited sequences and timeline tracks at 1:1, 1:2, 1:4 size.
  - Fast scroll through source frames using scroll bar.
- **Clip window.**
  - Full info display shows thumbnail sprite, clip title, clip duration, sound type and file size of DIY clips.
- **Input File types.**
  - ViA (packed VIDEO interleaved with AUDIO files) produced by Acorn Replay DIY kit.
  - Audio samples in 8bit Mono or Stereo, linear or exponential (mu-law).
- **Output file types.**
  - ViA files for input to Acorn Replay compressor.
- Edit decision lists for matching Empire edits to original video tapes.
- **Supplied Utilities.**
  - Acorn Replay Compressor.
  - Splitter.
  - Splits Acorn Replay Movies across multiple floppies.
  - Re-joiner.
  - Re-joins Movies back onto a hard disc from floppy.
- **To run EMPIRE you need:**
  - RISCOS 3.1 or later
  - ARM250 (ARM3 for real time preview).
  - 4 Mb of Memory.
  - 80 Mb Hard Disc.
- **Additional recommended equipment.**
  - Computer Concepts Colour Card or State Machine G8 Card will give extended 15 bit per pixel colour preview, true 16 grey scale support and large screen 256 colour desktop displays.
  - For archiving completed Movies and clips a 128Mb 3.5" Magneto-optical or 20Mb 3.5" Floptical drive is recommended.

**EMPIRE - the premiere editor for ACORN REPLAY.**  
Edit your own DIY Movies and existing Movies from CD-ROM or hard disc.

**Acorn Replay**

## THE ACORN REPLAY MOVIE EDITOR FROM

42 Crwys Road  
Cardiff  
CF2 4NN  
Tel (0222) 644611  
Fax (0222) 644622

Acorn Replay DIY Kit also available for only £250 +VAT

AVAILABLE FROM 1st MARCH.

See us at the Spring Acorn User Show Harrogate 15-17 April

ACCESS & VISA WELCOME (Closed Mondays)

**UNIQUEway**

**£75** +VAT

**Visions**  
multi-media

## IMAGE PRESENTATION SOFTWARE FOR ARCHIMEDES COMPUTERS

Fully RISC OS 2 and 3 Compliant 1Mb RAM required

For home and professional video presentations and titling.

Available as a Key Program with Add-On Modules.

Modules may be added at any time and in any order.

Key Program enables 'slide show' style presentation of up to 100 static Paint and Draw images of individually variable duration with up to 15 selectable mixes between images

Add-On Modules enable static and scrolling text superimposition over images, triggered CD audio, 'Acorn Replay' files, 'Sound-tracker' or 'Armadeus' samples. Superimposition of static or moving (scaling & rotating) sprites along designated paths, full Genlock control, and record/replay of key passes and mouse strokes.

Key Program £79.99 including VAT

Add-On Modules from £20.00 to £60.00.

Full Module information included with Key Program or available on a separate leaflet.



**Calan Craft Software**

Calan Craft Ltd 96 High Road Byfleet Surrey KT14 7QT

Telephone: (0932) 342137 Fax: (0932) 336435

Telephone / credit card orders welcome

## ACORN POCKET BOOK WITH A-LINK

**Pocket Book: £249.95 inc VAT**

**VAT**

**A-Link: £59.95 inc VAT**

Acorn's new Pocket Book has now reached the final stage of its conception, with the completion of the optional *A-Link* file transfer software.

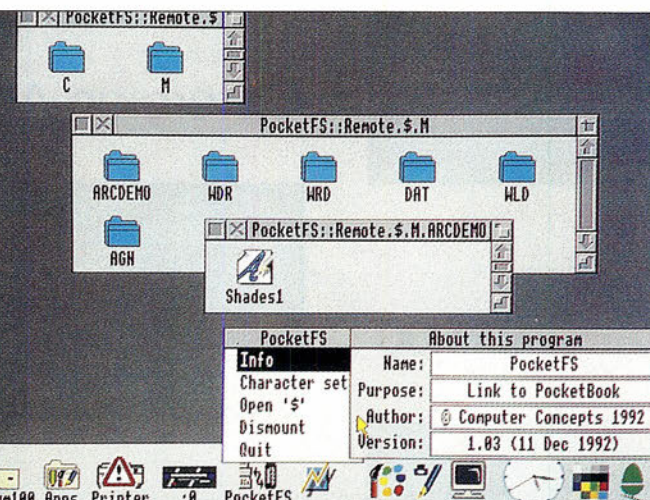
The Pocket Book is Acorn's customised version of the Psion Series 3 pocket computer. Acorn's collaboration with Psion was inspired, but how does the Pocket Book compare with the original Series 3?

Acorn is at pains to point out that the Pocket Book was devised specifically for the education sector. For this market Acorn felt a spreadsheet and spelling checker were mandatory. Built-in Series 3 applications had to be sacrificed to keep the cost down and provide Rom space for the spreadsheet.

This means Pocket Book users must do without the *Agenda* personal diary/scheduler, speaker phone dialler and OPL programming language. Even the *World Time* application failed to survive for an airing in the geography classroom. Password security options have vanished too.

The Rom space released accommodates a version of the Series 3 spreadsheet, which Acorn calls *Abacus*. This is almost identical to the Psion version, though a handful of esoteric financial functions have been left out. The spelling half of Psion's *Spelling Checker* and *Thesaurus* is included with the Pocket Book on a plug-in SSD (Solid State Disc cartridge).

The suggestion that a variant of the Series 3 would be ideal for schools is unquestionable, but it's up to teachers and their students to decide whether the Acorn formula is better for them than Psion's. Acorn counters any disappointment



A-Link is a piece of superior file transfer software

over the missing application, *Agenda*, by explaining that it is not much good for schools anyway. Instead, Acorn is hoping that a third-party developer will produce a more suitable school diary application that allows the use of timetables.

Currently, only one built-in application displaced from the Series 3 is available to Pocket Book users as an upgrade option: the OPL programming language. However, most third-party software releases for the Psion are Pocket Book compatible as well. Files can be exchanged with SSDs from Psion's MC (Mobile Computer) laptop as well.

### LINKING UP

Acorn is certainly on to a winner with *A-Link*. This package allows the user to link up the Pocket Book to a desktop Risc OS machine. Contracted by Acorn, *Computer Concepts* has endowed Pocket Book users with a superior file transfer system.

Like the *PcLink* software for the Psion, *A-Link* comprises a two part serial interface, an Arc serial cable and the file transfer software. *A-Link* provides familiar and elegant Risc OS management of any Pocket Book files. Effectively, a Pocket Book is treated like a rather slow (9,600bps) external

Arc drive, though care is needed with long Arc filenames and any open files at the Pocket Book end. In contrast, PC users have to wrestle with a very unfriendly non-graphical link program.

*A-Link* also provides file translation to convert *Abacus* and database files to Arc CSV format and Pocket Book WP documents to Arc text or RTF (Rich Text Format).

### MODEM LINKS

At present, the documentation fails to mention one useful point. The *A-Link* serial interface for the Pocket Book presents itself as another Solid State Disc containing a terminal emulation. Acorn says this oversight will be corrected in the next editions of the *A-Link* manual. Despite the pocket-sized display, the terminal application works very well with a modem once you've changed the Arc lead for a modem one, but it's a pity that the top link speed is limited to 9,600bps.

The Acorn Pocket Book is certainly a compromise in favour of the education sector. For that reason it can't be recommended for non-educational users. On the other hand, general users may consider the Series 3 Psion a better buy, since the *A-Link* package can also link the Series 3 to an Archimedes, thus enhancing the versatility of your main computer.

It's a shame Acorn couldn't have badged a full-spec Series 3 for its many loyal users who have left their school days well and truly behind them.

**Ian Burley**

## MULTIMEDIA

Acorn's Multimedia Expansion Unit is little more than a CD-Rom drive packaged in an A4000-style case. But in detail, it is nicely thought through.

The CD-Rom drive is a Sony CDU-561: it conforms to all the standards – CD/XA and CDI – and it is one of the new-generation multi-speed units. It can play a disc at double speed to load data faster, or slow down to play audio normally. And it is a multi-session drive as well: this is vital to the Kodak Photo-CD system Acorn will be supporting in the near future.

Pictures can be added incrementally to Photo-CDs, a second batch being added to an existing disc, but single session drives will only be able to access the first lot of photos.

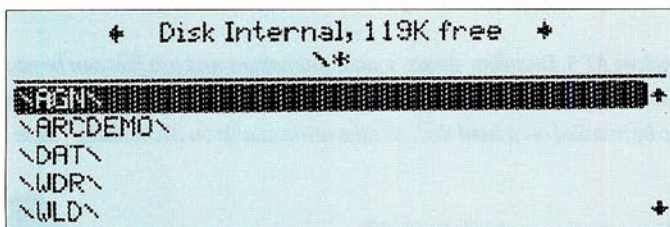


There's also room inside for a second and third 5.25in half-height SCSI device. You could, for example, fit a big hard disc and a magneto-optical disc drive. On the front of the expansion unit is a standard headphone output, and a control to mix the sound output of the computer with any CD audio, a neat arrangement.

As an option, Curamanga will supply a small amplifier to sit inside the box and drive normal hi-fi speakers directly. Rear connections are commendable: the usual SCSI in and out, stereo CD audio connectors and three push-switches to select the SCSI id numbers of the three drives.

The Multimedia Expansion Unit isn't a chunk of iron everyone should rush out and buy. It's £499 without a SCSI card, and doubtless you can add a multi-session CD-Rom drive for less. But its facilities are ideal for education, and it is an important 'statement of intent' from Acorn.

**Graham Bell**



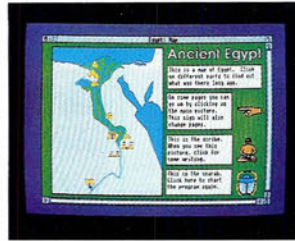
The Pocket Book comes with software on solid state disc

## Ancient Egypt

£45.00

Ancient Egypt is an application to support the Supplementary study unit in History at Key Stage 2. From a map of Egypt, children can select areas of interest and explore them. The application is supplied at two reading levels. Discs of the drawfiles used and of scanned sprites are also available for use in other applications.

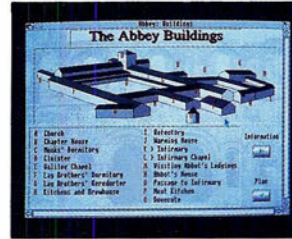
**Key Stage 2**



## Breathe life into History

### Cistercian Abbeys

£45.00



This application can be used as part of an introduction to Core Study Unit 2: Medieval Realms at Key Stage 3 or as part of a Key Stage 4 GCSE course. 75 linked pages allow exploration and investigation of the buildings of an abbey as well as examining the role of abbeys in society and developments in the mediaeval world.

**Key Stage 3 & 4**

## Saxon Life

£45.00

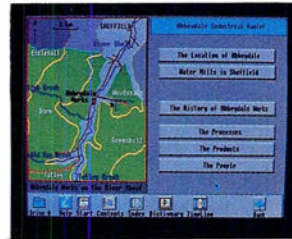
Saxon Life and Viking Invaders support Key Stage 2 Core Study Unit 1, Invaders and Settlers. This application follows the history of the Saxon settlement and gives extensive details of lifestyle and beliefs. Problem solving exercises in which the children take the part of Saxon settlers are provided on a separate disc.

**Key Stage 2**



### Local Industry

£95.00



This 500 page application explores the history and development of industry in the Sheffield area. It is structured to encourage open ended investigation of real historical data at all ability levels. Pupils can use, analyse and cross reference the materials. This is a whole school resource with relevance across the curriculum.

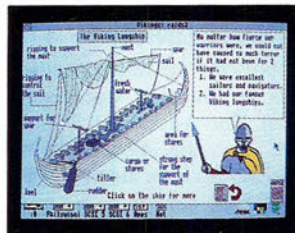
**Key Stage 3 & 4**

## Viking Invaders

£45.00

A lively and entertaining account of the impact of the Vikings on British society. Children can follow the history of the time as well as learning about lifestyles, trade, beliefs and the influence that the Vikings still have in modern times. Maps, pictures and text show how Britain formed a part of the much wider Viking world.

**Key Stage 2**



### Battle of the Somme

£95.00

(£145 with Laservision Disc)



This unique application makes use of laservision technology (even your old Domesday player!) to deliver a graphic, moving and effective teaching resource. Original film from 1916, interviews with survivors, soldiers' letters, songs, written accounts and a database make this one of the best multimedia applications available.

**Key Stage 3 & 4**

## Castle Life

£45.00

Castle Life is aimed at Key Stage 3, in particular CSU 2, Medieval Realms and the Castles and Cathedrals supplementary study unit. The 57 illustrated pages in this application allow children to make their own exploration of a castle, to see it as a living community and to follow its development through time.

**Key Stage 3**



## with Oak Solutions' History Courseware

All these applications support the three History Attainment Targets as well as Technology AT 5. Drawfiles, sprites, sound, animations and text files can be easily saved by the user and re-used in a word processor or database. Each application is accompanied by a set of photocopiable worksheets and a booklet of teachers' notes. All applications are supplied with a site licence. Local Industry is designed to be installed on a hard disc. All titles are available on Archimedes, please enquire about availability on PC platform.

Oak Solutions Ltd. Suite 25 Robin Enterprise Centre Leeds Road Idle  
West Riding of Yorkshire BD10 9TE Tel: 0274 620423 Fax: 0274 620419



QUALITY RELIABILITY COMPATIBILITY PERFORMANCE



A five year old, who had just started school, was asked what she did during her first week in class. She proudly announced that she: 'played with the computer'. Further questioning gave more information; she had been using an overlay keyboard to do some simple writing. We might not view this as 'playing' but, as with most children in the early days at school, she saw all computer activities as play.

Older children have a different view of computer 'games'. They are more familiar with fast-moving and graphically powerful arcade games, and are aware of the difference between using the computer as a tool for learning and playing computer games.

So what about the games software advertised as educational? Do children find them entertaining and, if so, then what is their educational value? To answer this question, we took a look at a selection of educational games. The software under this heading seems to fall into roughly two categories.

### THE ADVENTURE

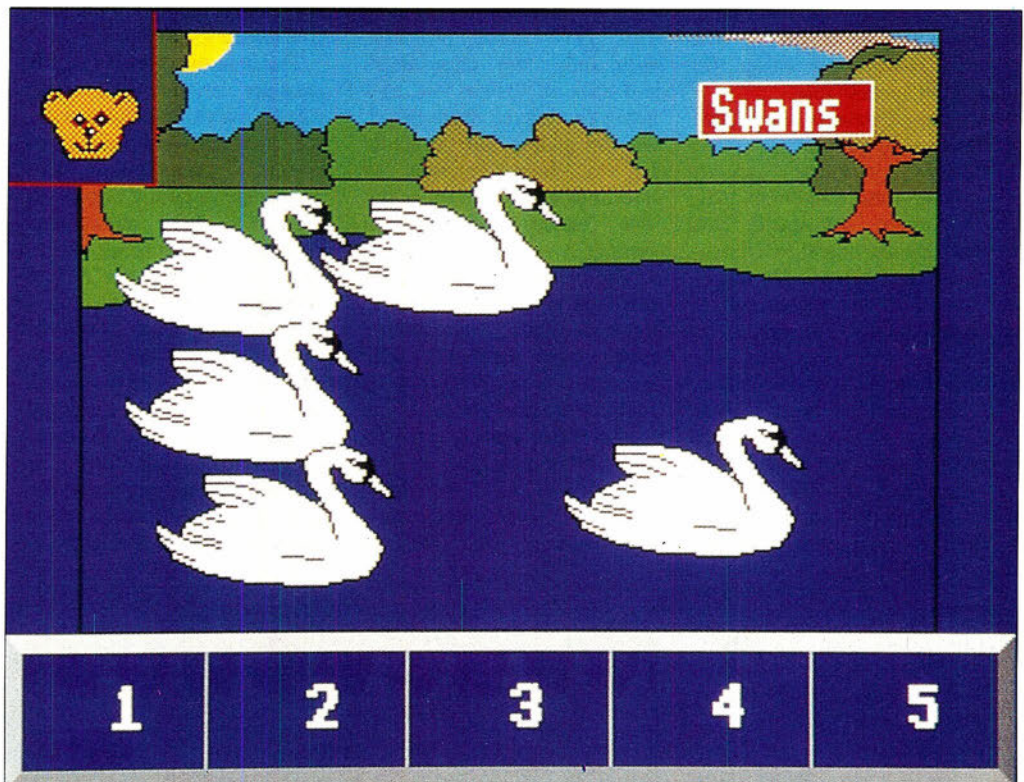
The first is adventure-type games, usually involving problem solving and moving around imaginary worlds. The problems to be solved using this type of game might be mathematical, logical or language-based, or a combination of all three. They sometimes need a good level of reading. Used in a classroom these can lead to all areas of the curriculum and may be used as a teaching theme. Some of them are simulations of real situations, such as building castles, or becoming a badger. We will look at this type of game in more detail next month.

### DRILL AND PRACTICE

The second category of games is the drill and practise type which we checked out this month. These test mathematical rules, spelling, punctuation and reading, ordering, matching or memory. Many of them are advertised as needing no adult input and, in general, are cheaper than more powerful multi-purpose pieces of software. Large numbers of them

# PLAYING AROUND

Valuable teaching tool or just a bit of fun?  
Clare Johnson examines the merits of educational games



Freddy Teddy helps children to swan through mathematics

are also aimed at specific areas of the National Curriculum. Teachers have certain logistical problems to solve in order to make computer games useful in a classroom. Computer time for each pupil is limited, which is not such a problem at home. As a result, teachers need games that allow them to stop and start the software very regularly, without having to go back to the beginning, so that each child gets a go...

There is a curricular plan for pupils, and finding a game that fits it and each individual child's needs could become expensive if the software is not

flexible. The game has to be versatile enough to allow different levels of difficulty. Bear in mind that adult input is often required.

Trying the games with Peter (aged eight) and Richard (aged 12) revealed that they both became very bored when the level was too difficult and wanted the easier levels again.

In every case, the graphics on screen were a major source of pleasure to the children. They liked being told their score, and a high score table with names on it was a winner. Some of the writing was too small and, when working

against the clock, this can be very frustrating for a child who does not read fluently.

All the games we tried had merits and could be used both at home and in school. Those that allow changes to levels of difficulty and flexible answering methods give better value than the more rigidly structured versions. I am less drawn to quizzes than to the testing of skills and concepts, since the answers are easily learnt and quickly lose their interest.

Finally, my thanks to the children, who tested these games for some time with very few complaints.

# 10/10 MATHS/ENGLISH

**Triple R Education**  
Tel: (0742) 780370  
£25.95 each

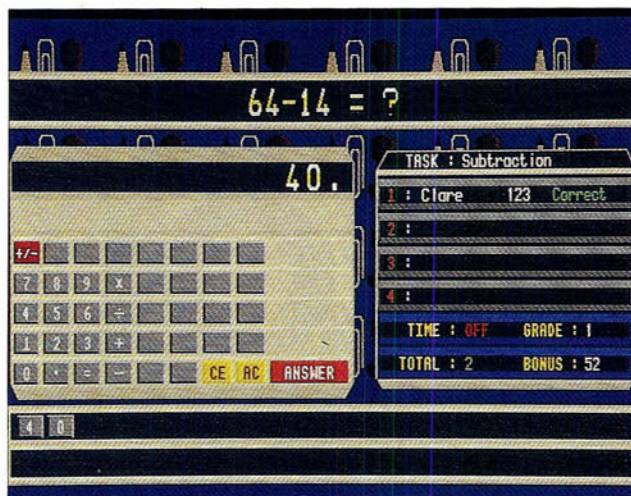
*'I like what it says to me when I get it right; cool dude!'*

These two packs of games, both aimed very much at the relevant National Curriculum documents, allow testing of a variety of number and language skills.

Each package has six games, all offered at six levels of difficulty, and each level tackles specific attainment targets. The explanation of which areas were being tested are very clear and the player gets a printed certificate if a target is achieved with a 100 percent success rate.

The software is very much designed in the arcade game manner: shooting targets, moving images and high quality graphics and speed. This occasionally leads to frustration if targets move too fast or slow, but these speeds can be changed and the sound can be lowered; the rewards for success were much appreciated.

The working discs can be copied, players' names entered and details saved for future use. You can have up to four players at once, and their playing order is chosen



10/10 tackles the National Curriculum

by the computer at random. This gave some problems with only two competitors and calls of: 'its not fair, he's going first again' were heard. All the games can be set to have a limited number of questions and/or the timer set. The variety of possible settings is very impressive.

The first game in each pack involves shooting targets. In Peter's opinion: 'the shooting game was excellent'. The questions were presented as rules of numbers, where you had to shoot the correct answer. In the language version, the first level involved simple anagrams, then recognising abbreviations and on to

rewriting sentences in the passive tense.

The next two games in each pack are varieties of the same theme; matching a question to the right answer, word synonyms, anagrams and opposites. A wrong answer in *The Big Bang* game was rewarded by a large explosion, so we did get a few wrong, because that was fun.

The Mathematics pack then offers *Silicon Brain*, a calculator simulation. We weren't sure what we were supposed to get from this that using an ordinary calculator didn't give us, apart from recording our keypresses. It would have been helpful to be able to

print those out, since adult consultants aren't always immediately available.

Both packs offer a snakes-and-ladders type game with multiple choice answers and simulated dice throws. It is possible to set your own questions, but the screen layout means that you have to get very close to be able to read all the text.

The English pack also offers a library game to put books in alphabetical order. Words are down the book spine, which makes them difficult to read at speed. I never got 100 percent on this game, because I never managed to do it in the shortest number of moves. The other game, *Word Fit*, kept me amused for a long time. Not unlike *Scrabble*, words have to obey on-screen rules and are then fitted onto the board or put into a bin.

These two packages offer very good value for money, and the only quibbles are minor ones, like the inability to print out screens and questions so the players can have some practice when it isn't their turn. However, the children 'played' happily for some time, especially at the easier levels and they enjoyed their work, which is, of course, the acid test.

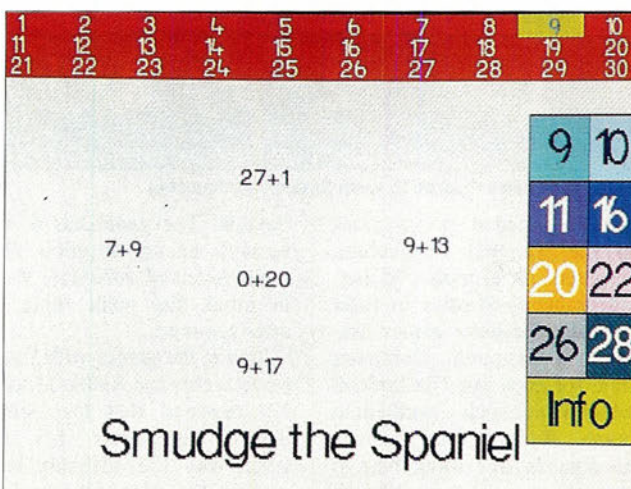
# SMUDGE THE SPANIEL

**Storm Educational Software**  
Tel: (0935) 817699  
£25.99

*'I like it when Smudge barks if I get it right'.*

This piece of software has three activities, again testing basic skills, including number recognition. It is aimed at children from four to eight years of age, but could be used by nursery classes.

The three activities comprise *Writing Numbers*, *Dot to Dot* and *Count and Colour*. The first allows children to draw round the numbers from zero to ten using the mouse. This does involve some skill, since it is quite difficult to control the mouse. When the number has been traced, the only way to turn the pencil off



Smudge is simple and flexible enough for the younger child

is to hold the left hand mouse button down, something small children definitely find difficult. I would be nice to have a finish button of some kind.

The graphics are very clear, changing the numbers is done by means of the function keys and the screen can be printed in any of the activities.

The second activity consists of classic join-the-dot puzzles on screen. Numbers up to 30 can be selected, and the dots are joined by pressing the correct number on the keyboard or by moving the pencil using the mouse. When complete, the picture can be coloured in, but the lines don't always join up so sometimes more is filled in than intended.

The third game reminds me of painting by numbers. The palette is numbered and the areas of picture to be filled have sums written on them. Get the sum right to choose the right coloured paint.

*Smudge the Spaniel* is simple, very easy to use and flexible. It might be too trivial for many eight year olds but is very useful for most younger children.

## FREDDY TEDDY SERIES

**Topologika Software**

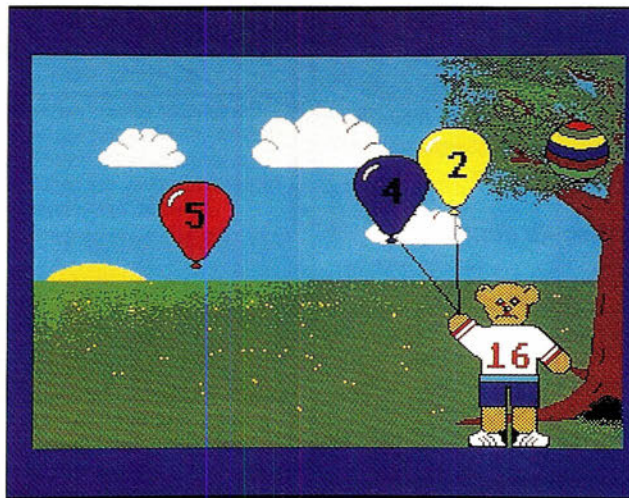
(0733) 244682

£19 to £20

There are a number of *Freddy Teddy* games available for young children and the latest packages to appear in the series are *Balloons*, *The Zoo*, *The Puddles* and *The Wardrobe*. In each case, Freddy is involved in some problem solving activities and they are useful for general skill building.

In *Balloons*, Freddy's ball gets stuck in the tree. His shirt has a number on it and numbered balloons float by which have to be collected until they add up to the shirt number.

Teachers can set maximum numbers, the allowed number of guesses and sequential or random presentation of the numbers.



Freddy learns to count using the balloon method

*The Zoo* is a simple counting test. Animals appear in a the zoo and players count them and press the required digits. Settings can also be changed to allow greater flexibility. There is no print facility

which would be nice in a classroom for display purposes, and for making extra worksheets.

*The Puddle* and *The Wardrobe* are both sequencing games; in *The Puddle* Freddy

falls into a puddle and has to hang his clothes on the line to dry. The child has to choose the right colour for each item of clothing, but clues are given if you can't remember what he was wearing.

*The Wardrobe* lets Freddy get dressed correctly for four different occasions; snow, bedtime, gardening and the paddling pool. Children have to choose the correct items for Freddy in the correct order. Five out of ten possible items are presented.

Again there is no printing facility; it should be possible to provide this without much difficulty.

It seems a shame to miss it out, especially since all the *Freddy Teddy* series are easy to use, great fun to play with very young children and could form the basis for lots of curricular topic work.

## FUN SCHOOL 4

**Europress Software**

Tel: (0625) 859333

£18 to £20

There are two series of *Fun School* games, *Fun School 3* and *4*. They are aimed at different ability levels and each series is made up of three packs, for three age groups: under-fives, five to seven and seven to eleven. Each pack has six different games.

The example I looked at was *Fun School 4*, age seven to eleven, in which the games are built around a theme of espionage, and each problem has to be solved before going on to the next clue.

Agent Q has to solve the mystery of the disappearing treasure, and the story is told in the accompanying notes as well as on the computer screen. It is possible to stop and start each of the games at any stage, so that you can select your own activities. Peter was entranced by the opening graphics; Agent Q walks across the screen shining his torch. His verdict was: 'the graphics are great but some of the questions are really difficult.'

The first game is based on proportions, can be played in



Funschool caters for three age groups: this one is for 5 to 7 year olds

fraction, decimal or percentage mode, and this has three different levels of difficulty to achieve. This was the most difficult section of the package, and both children needed help with changing fractions like  $\frac{8}{20}$  to  $\frac{2}{5}$ . What a nice way to introduce the ideas, though.

Next, Agent Q has to solve a multiple-choice quiz, and there are four levels to achieve. Each is increasingly difficult, but you can pass up to three times on each level. You need some good general knowledge here, and there is a limit to the time you can take

answering. Next it's off to the airport, first to do some foreign currency exchanges and then to buy some items that will be crucial to the mission.

There are three levels of difficulty in the game, and the rates used bear little relation to reality; but you do get to deal with different currencies and have to learn to distinguish between them.

You then have to fly off to foreign places and have to answer questions about the flight timetables before you can leave each of them. All the times are in am/pm format; perhaps the option of a

24-hour clock format would be another idea. Once again, there are increasing levels of difficulty.

*Spy Travels* finds Agent Q using different methods of transport, travelling round the world. An atlas is a must when playing this section, and I found it difficult on the very small screen map to achieve the accuracy required, even though I knew where the places were. I also had to try and remember that you can't sail a boat over dry land.

Finally, you reach the desert and the pyramids. Treasure is found inside the pyramids if you get the date of an historical event correct. 'I know all the answers, so it's quite easy' was the verdict here, and there was no stopping until all questions had been answered.

If I was using this in a classroom, I would like to be able to use some screens printed out as teaching aids which isn't possible, but would certainly not put me off using the software. The children enjoyed all of it but did need help with many parts, so do think carefully if you are to buy the correct game in the series for your child.

# THE Datafile

71 Anson Road, LOCKING, Weston-Super-Mare, BS24 7DQ



To celebrate the libraries third year it now boasts a new, fully multi-tasking catalogue application that runs from the iconbar. It loads the complete catalogue from disc in just 55 seconds. Its search facility is extremely fast and it supports Acorn's interactive !Help.

Author Dirk-Willem van Gulik.

## 800k Catalogue / Demo Disc XII contains:

DrawFiles	Cartoon and game characters.	Thomas Whittaker
!Bricks	A small but excellent demo.	Michael Porter.
!ImpCompr	Compress those Impression files automatically. Requires !SparkFS.	Jonathan Marten.
!TheFace	A funny animated pointer.	The Loris
Morse Code	An Outline font. Teach yourself Morse.	Michael Jackson
!Pypes	A very addictive game.	Andrew Cawte.
!Player2	Tracker player and module.	Hugo Fienes
!FracLand2	Design / manipulate fractals landscapes.	Peter Millerchip
!Menon 2.06	An application launcher. Invaluable.	Joris Rölting.
!TempConv	Easy temperature conversion.	Elliott Hughes.
!ViewHelp	Help windows designer.	David Radford.

## The HD version also includes

!Spatience	A compendium of card games.	Jason Horsnell
GraphProgs	80+ basic graphic programs.	Various.
Images	1 Jpeg file and 1 GIF file. Top quality.	Anon.
!Translatr	Version 7.12 with improved Jpeg usage.	John Kortink.
!SupRender	Converts draw to sprite files.	Ferdinand Oeink
!LineEdit	A very good command line editor.	Richard K Lloyd
!Zap	Fast Text and Memory editor.	Dominic Symes.

## Recommended PD and Shareware.

**Utility 19** - PowerBase 4.79c now includes a suite of programs for teachers. Exam stats, timetables, attendance records, parents evening appointments.  
**Utility 61** - MiniHound a shareware 30,000 word thesaurus. Top class.  
**Utility 62** - A 12 disc electronic globe !EarthMap. Requires 24 megs free on a hard drive to instal. Once installed it uses 13.5 megs. Package costs £12.50.  
**Clip Art 31,32 & 33** - Hundreds of first class archived draw files.  
**Games 30** - An outstanding invaders game plus other great games.  
**NewDawn Issue 2** - The best Archimedes magazine includes a new game and a flight simulator called 1914. Highly recommended.



## 2 The Return

A flight simulator competition

Destroy the six defended targets, collect the code word and you could be the winner of a £50 PD and Shareware voucher.

By the authors of F18Hornet & NewDawn  
**Competition open until June 1993 Only £7.50**

## What has The Datafile got to offer you?

1. A top class library with over 650 archived discs.
2. £1.25 per standard disc plus a free disc for every 10 purchased. HD discs are available at only £2 each. Plus a Pick 'n' Mix service.
3. Fast turn round of orders 95% are despatched the same day.
4. The library is willing to swap PD and we offer authors free discs of PD when they send their programs to us.
5. The library gets all the latest updates as they are released and the catalogue is updated weekly to keep you informed.
6. We offer a registered users scheme. For £6 per year (£9 for HD discs) you get the latest catalogue disc automatically bi-monthly. You are also entitled to two free discs for every ten discs purchased.

**Why not register now and be sure of your catalogue disc?**

**PRICES** - HD cat/demo disc £1.50. 800k cat/demo disc £1 add 50p for a second disc with the HD programs on. All other discs are £1.25 each. For Europe add 20pence per disc. Rest of the world add £1 for first disc and 50p for each additional disc.

ie. Package !Earthmap would be £14.90 in Europe or £17 for the rest of the world. AIRMAIL.

# ARCHIMEDES 100 ESSENTIAL PROGRAMS £19.95 + £1.50 p&p

**NO** Archimedes.user can afford to be without these

This collection contains many useful & life saving PD & Shareware programs for the Acorn Archimedes. Once you have them you'll wonder how you ever managed or *dared* to do without them. The collection includes: aids to compatibility, back-up programs for floppies & hard disks, disk copiers, file recovery, disk & file management, Virus protection & removal, screen savers, desktop enhancements & much much more!

# ARCHIMEDES 100 GAMES £19.95 + £1.50 p&p

A superb collection of 100 classic PD/Shareware games for the Archimedes. Includes arcade games, board games, card games, simulations, adventure games, - the lot! Please state your computer model when ordering. Also available for IBM compatible PCs.

## SHAREWARE FOR BBC 'B', MASTER 128 & ARCHIMEDES

## FREE CATALOGUES



We have PD/Shareware catalogues for BBC 8 Bit micros (BBC 'B', Master 128) & Archimedes as well as IBM PC & Compatibles. Send SAE or phone for a free copy.

## HOW TO ORDER

Pay by Credit Card (Visa, Access, Mastercard), or Cheque/P.O made to "KINGSWAY".



# KINGSWAY COMPUTER SERVICES

72 GLENCOE ROAD, SHEFFIELD S2 2SR  
**(0742) 750623 24 hours**

VISA

## ACORN USER SHOW APRIL 93 - STAND 63 Free Show Tickets. Ask for details

ITEM	1+	10+
Bus Agiler Mouse	25.49	23.99
Serial Atlas Mouse	16.97	14.95
6" Arc Printer Cable	2.51	2.25
15" Arc Printer Cable	4.95	4.50
25/25 M&F 3' Cable	3.36	3.10
25/25 M&F Pin 6' Cable	5.92	5.50
36/36 Centrx 6' Cable	5.92	5.50
25 Pin AB 2 Way Switch Box	10.17	9.95
36 Ctx Pin AB 2 Way "	12.95	11.95
25 Pin ABCD 4 Way Sw Box	19.95	17.95
36 Ctx Pin ABCD " " "	21.95	19.95
9/15/25/36 Adaps etc.	4.95	4.45
Gender Changers	4.95	3.95
Mouse Mats 4mm	2.51	2.25
Printer Stands	4.21	3.95

**NOSHER GAME** - only £5.95 (£4.95 at the show).

TEL: 0924 368294, FAX: 0924 383499,

CAR: 0831 554758.

Free Delivery. Prices exclude VAT.

Goods are US Imported every 5 weeks. Back orders taken. (Country of manufacture may vary). (E & OE)

## DD International Software & Computer Supplies

3M BRANDED	10	50	100
3.5" DS/DD	5.92	28.90	57.50
3.5" DS/HD	11.70	57.90	109.00
5.25" DS/DD	4.21	20.50	39.90
5.25" DS/HD	8.47	39.90	79.00

## Bulk Disks (Price, subject to availability).

3.5" DS/DD	3.79	17.95	34.90
3.5" DS/HD	6.77	29.95	55.90
5.25" DS/DD	2.51	11.49	22.00
5.25" DS/HD	4.21	19.50	35.00

Show Prices will be lower on some goods. EXTRA 10% discount with this ad, as long as you hand it to us with your name & address on the back. Photocopies will do. (offer does not apply to disks).

## DD INTERNATIONAL

Cheques payable to DD International, P.O. Box 95, Wakefield, WF2 0XZ

VISA

# ACORN APPROVED LONDON DEALER

Wide range of software and hardware stocked

## ACORN AUTHORISED EDUCATION DEALER

TEACHERS' DISCOUNT SCHEME  
 NOW AVAILABLE — PHONE FOR DETAILS

## Easy to get to

Train: WOOD ST Station  
 (British Rail)  
 Road: Bottom of M11,  
 just off North Circular  
 Tel No: 081-521 1784



## AUTOMATIC SERVICES

217 WOOD STREET  
 WALTHAMSTOW  
 LONDON E17 3NT

# The Complete Upgrade Solution



Qualified  
Dealer

## A310 Memory

- Four layer printed circuit boards
  - Free MEMC1a with 4Mb upgrade
  - Courier collection & fitting included
- 2nd Mb - \$99 4th Mb - \$199**  
**2nd to 4th Mb upgrade - \$99**

## A3000 Memory

- Uses only eight RAM devices
  - User upgradeable from 1 to 4 Mb
  - Four layer printed circuit board
  - Low power consumption
  - Available without RAM devices
- Please phone for prices**

## A4 Trackerball

- Complete mouse replacement
  - Plugs into existing mouse socket
  - No extra software required
  - Ideal for 'portable' use
- Genius Hi-Point trackerball - \$49**

## A5000 Memory & Drives

- Increases A5000 memory to 4Mb
  - Upgradeable and non upgradeable versions
  - 4Mb to 8Mb price includes installation
  - High quality, four layer circuit board
- A5000 4Mb RAM non-expandable - \$89**  
**A5000 4Mb RAM - \$110 4Mb to 8Mb RAM - \$399**  
**2nd 100Mb IDE Drive - \$265**

## Aleph One 386PC & 486PC

- Provide full compatibility with PC software
  - 10 to 20 times speed increase over emulator
  - Single width modules suitable for all machines
  - Multi-task in RISC OS window
  - Both upgradeable with floating point coprocessor
- 386PC with 1Mb RAM - \$395 with 4Mb RAM - \$475**  
**486PC with 1Mb RAM - \$495 with 4Mb RAM - \$575**

## Syquest removable disc systems

- Including one cartridge, drive unit and all cables
  - 42Mb removable cartridges
  - High-flow fan fitted for improved cooling
- Atomwide Syquest drive unit - \$389**  
**Drive unit with Morley SCSI card - \$524**  
**Spare 42Mb disks - \$55**

## 3+3=199

- Aleph One's ARM3 Upgrade & Acorn's RISC OS 3 are available together at a special price for a limited period
  - Latest surface mount 25MHz Aleph One ARM3
  - Single user version of RISC OS 3 with all manuals
- ARM 3 + RISC OS 3 - \$199.00 (fitting to A3000 add \$29.00)**  
**A310/A440 ROM header board - \$20.00**

## Ethernet Products

### A4 pocket adapter

- Full Ethernet (IEEE 802.3) conformity
  - Supports 'thin' wire cable
  - Fully compatible with AUN
- A4 pocket adapter - \$199**

### A400/A5000 series Ethernet module

- Full Ethernet (IEEE 802.3) conformity
  - Fully compatible with AUN
- 10base2 (thin wire) - \$149**  
**10base2 + 10base5 (thick & thin wire) - \$175**

### A3000 internal Ethernet module

- Full Ethernet (IEEE 802.3) conformity
  - Supports 'thin' wire cable
  - Fully compatible with AUN
- A3000 Ethernet module - \$199**

## Acorn Machines

### A3010

- 1Mb expandable to 4Mb
- 2 Joystick interfaces
- 2/4Mb RAM upgrades available

### A3020

- 2Mb expandable to 4mb
- Internal Econet/Ethernet option
- Internal hard drive option

### A4000

- 1mb expandable to 4mb
- Ideal business solution
- Three box design

### A5000

- ARM 3 processor
- 12MHz memory
- 4 module expansion

**All new machines contain a 1600k floppy drive, RISC OS 3 and the new ARM250 processor. Please phone for full details and prices for the new range of machines.**



- Atomwide is open between 10:00am & 5:30pm Monday to Friday
- Callers by appointment please
- Dealer enquiries welcome
- Phone for full details on all products



**All prices exclude VAT at 17.5% but include delivery**

# ATOMWIDE

23 The Greenway Orpington Kent BR5 2AY Tel 0689 838852 Fax 0689 896088



# Watford Electronics Ltd

Established 1972

Mail Order & Showroom: Jessa House, Finway, off Dallow Road, Luton, LU1 1TR, England

Tel: 0582 48 77 77 Tlx: 8956095 WATFRD Fax: 0582 488 588



The sign of  
Quality

Showroom Only: Jessa House, 250 Lower High Street, Watford WD1 2AN, England

Tel: 0923 237774 Fax: 0923 233642

Shop Hours: 9am to 6pm (Mon.-Sat.) Thursday 9am to 8pm. FREE customer car park.

All prices exclusive of VAT; subject to change without notice & available on request.



The choice  
of Experience

## Archimedes micro

System	Basic	Colour	Multiscan
A3010-1Mb Family	£424	£584	£749
A3010-2Mb L/C	—	£680	—
A3020-2Mb FD	—	£749	£799
A3020-2Mb HD60	—	£899	£949
A4000-2Mb HD80	—	£949	£999
A5000 No HD	£689	—	—
A4000-Home Office	—	£999	£1049
A5000-2Mb HD80	—	£—	£1399
A5000-L/C 2Mb HD80	—	—	£1445
A5000-4Mb HD120	—	—	£1599
A5000-2Mb ES	—	—	£1299
A5000-2Mb NS	—	—	£1399
Pocket Book	£212	—	—
Pocket Book Class	£2127	—	—

On-Site Maintenance now available on all Archimedes Micros. Please telephone for details.

### Archi A4 Notebooks

A4 Notebook with 2Mb RAM	£1399
A4 Notebook 4M RAM/60M HD	£1699

## FREE OFFER

When you purchase any of the above Archimedes Micros, we will give 10% of the value of the machine in Hardware or Software of your choice

### Archi Accessories

• 3.5" 800K 2nd Floppy Drive (305/310)	£118
• 5.25" 800K external Floppy Drive	£80
• Acorn I/O Podule (Analogue/User/1MHz bus)	£79
• I/O Podule (Analogue/User)	£59
• MEMC 1A Upgrade	£29
• MIDI add-on to Acorn I/O Podule	£27
• MIDI Expansion Card	£65
• Econet Network Board	£38
• Archi replacement mouse - New design	£29
• PC Emulator v1.9	£95
• Floating Point Unit	£455
• Keyboard Extension Lead	£6
• 2 Podule Backplane	£20
• 4 Podule Backplane	£25
• Fan for above backplanes	£10
• Risc Os Extras Software Disc	£5
• Ethernet Card	£149
• SCSI Card 8 bit	£129
• SCSI Card 16 bit	£149
• SID Utilities Discs - Set of 4	£19
• ST506 Hard Disc Controller Card	£99
• A5000 Dust Cover	£9pr
• A5000 Technical Reference Manual	£65
• A4 Spare Batteries	£49

### RISC OS 3 Upgrades

• A 5000 Software Upgrade Kit	£16
• Software Upgrade Kit for the rest	£40
• Hardware Upgrade Kit 300/440	£25

### A3000 Accessories

• 3.5" External Drive	£95	• Monitor Stand	£15
• Technical Manual	£39	• Serial Upgrade	£19
• A3000 Dust Cover	£5	• Micro+monitor cover	£9
• Acorn Carrying Case for A3000	£10		
• A3000 User Port/Midi Upgrade Card	£44		
• A3000 User/Analogue/IIC I/O Card	£38		
• A3000 External Podule Case	£15		

### Scan256 Grey Scale Scanning

If you need a 256 grey-scale hand scanner for your Archimedes then look no further. Scan256 gives you up to 256 levels of grey at a maximum of 400dpi and is supported by state-of-the-art sophisticated software - for only £185. This makes it the only sensible scanning and image processing solution for the Acorn 32-bit range. Just compare these features:

- More than one copy of the image held in memory at once.
- Allows multiple consecutive operations without saving the original to disk.
- Highly advanced dithering and image size reduction.
- Convolution digital filtering with over 100 filters gives high quality images from poor quality scans.
- Adjustable scale and size during scan.
- Supports State Machine G8 Graphics Card.
- Includes shearing and rotation.
- Saves images in industry standard formats: TIFF, Sprite and AIM.
- True brightness, contrast and gamma correction.
- Multiple options - scale to page, centre sideways selected area.
- Selectable scanning modes.
- Plus much much more...

Please specify Archimedes type, not compatible with A3010, A3020, A4000.

£185

### A3010 DTP Family Pack

Supplied with 3.5" Floppy Disc Drive and a mouse, Colour Monitor and lead, TV modulator, 20Mb fast IDE Hard Disk Drive, 'Compression' utility to increase the Hard Drive capacity to typically 40Mb, the highly acclaimed Computer Concept's Impression Junior DTP package, EasiWord wordprocessor, Quest for Gold game, applications suite of software packages and comprehensive audio training tape.

RRP: £1095

### Sale Offer Price: £729

• A3010 DTP Family Pack with Learning Curve	£829
• Additional 1Mb RAM fitted	£39

Special Education discounts available on micros, RAM upgrades, ARM 3 Turbo Card, etc. Please write in or telephone:

0582 48 77 77

### Archimedes RAM Upgrade

All our memory upgrades are simple to fit. No soldering required. Fitting instructions supplied.

• R300-4 Layer RAM upgrade board (Bare).	£25
• R302-A3000 - to 2MB RAM Upgrade	£29
• R303-A3000 - to 2MB RAM Upgrade (expandable to 4MB)	£49
• R304-A3000 - to 4MB RAM Upgrade	£99
• R305-A3010 - to 2MB RAM Upgrade	£39
• R306-A3020 - to 4MB RAM Upgrade	£70
• R311-A305 - to 1MB RAM Upgrade	£30
• R312-A305/310 - to 2MB RAM Upgrade	£115
• R314-A305/310 - to 4MB RAM Upgrade	£229
• R412-A410/1 - to 2MB RAM Upgrade	£25
• R413-A420/1 - to 4MB RAM Upgrade	£50
• R414-A410/1 - to 4MB RAM Upgrade	£75
• R810-A410/1 - to 8MB RAM Upgrade	£579
• R820-A420/1 - to 8MB RAM Upgrade	£549
• R840-A440/1 - to 8MB RAM Upgrade	£479
• A5000 - to 2MB additional RAM Upgrade	£82

### Desk Top Publishers

Acorn's Archi DTP Package	£69
• Equasor £39; • Expression-PS	£19
Impression 2 DTP Pack	£123
Impression Junior	£65
Impression Business Supplement	£39
Impression II Borders Disc	£19
Ovation DTP	£85
Desk Top Thesaurus	£18

### Archi Wordprocessors

Pendown Archi	£48	Pipedream Spell	
Pendown Plus	£68	Checker	£40
Pendown Outline		Graphic Writer	£20
Fonts	£18	Easiwriter	£115
1st Word Plus - 2	£63	EasiWord	£58
		Prime Word	£52

### Databases

Flexifile	£79	Multistore v2.01	£174
Knowledge Organiser	£42	Pinpoint	£65
Magpie	£40	Pinpoint Junior	£23

### Spreadsheets

Eureka	£99	Schema	£89
--------	-----	--------	-----

### Business Graphics

GammaPlot	£39	SigmaPlot	£39
-----------	-----	-----------	-----

### Integrated Packages

• Pipedream 3	£116	• Pipedream 4	£146
• Desktop Office - Database, Graphs & Charts, Wordprocessor Spreadsheet, Communications	£98		
• Desktop Folio - Wordprocessor, Desktop & Interactive Publishing. Ideal for school	£75		



CREDIT CARD 24 HOUR

Ansaphone Hot Lines

(0923) 250234 or 233383

## Hi-Speed, Low Cost Archi Hard Disc Drive

Watford's advanced interface allows IDE drives to work on any Archimedes machine, speeds in excess of SCSI devices can be obtained at a fraction of the cost of a SCSI drive.

Up to four drives are supported by the IDE filing system IDEFS, up to two drives can be attached to each expansion card, up to four cards can be installed in a machine. An optional 20Mb or 40Mb hard disc can be supplied on the podule expansion card itself, with its fast transfer rate and power saving modes the drive is ideal for storing commonly used software such as the !Fonts application.

A powerful security feature has been provided with the two unique commands \*IDELock and \*IDEUnlock, ideal for educational establishments where hacking or tempering may be prevalent that may lead to loss of data. Once locked, the configuration can not be changed until a secret password is used. The !IDEForm Write Protect option is particularly useful in conjunction with \*IDELock as it will prevent any unauthorised deletion of data.

By an innovative use of on-board memory, the card will remember its configuration, even if moved to another slot or even a different machine, this also includes the unique security features.

### Hardware

- Single width EuroCard
- Supports proposed ANSI ATA (IDE) specification
- Fast 16 bit MEMC interface interrupt driven to support background disc operations
- 5 Mbytes per second peak transfer rate
- Optional on-card 20Mb or 40Mb hard disc
- Up to two drives (master and slave) per card
- Multiple cards per machine (up to four)

### Software

- Conforms fully to the Acorn IDE Specification
- All software supplied in ROM
- Filing system 'IDEFS'
- Desktop filer with drive ready detection and disc name under icon
- !IDEForm, WIMP based configuration and formatting software
- Drives can be individually write protected
- Up to four drives over multiple cards
- Power saving standby modes supported with configurable timeout
- Drives can be used without translation in native mode for minimum overhead
- !IDEFSdisk, creates PC emulator hard discs

### Prices

Part No.	Capacity	Access Speed	Price
ADA 0520	44Mb	28mS	£195
ADA 0530	100Mb	16mS	£295
ADA 0570	200Mb	15mS	£449
ADA 0580	330Mb	15mS	£799

All the above 3.5" hard drives are supplied complete with Controller Card, cable & Software on ROM. (Internal fitting). For use with A300/A400/A500 series machines.

AAA 0300 External Case & PSU for A3000	£85
AEA 1060 Archi IDE Hard Disc Podule only	£89

## Internal Hard Disc Drives for A3000/A3010

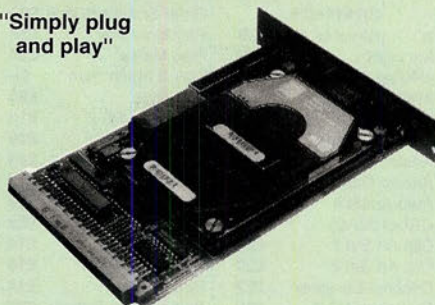
State of the art, 4 layer internal IDE Hard Cards for the A3000. Software supplied in, On-board ROM.

ADA 0150	20Mb	19mS	£149
ADA 0770	30Mb	19mS	£185
ADA 0750	60Mb	18mS	£329
ADA 0720	80Mb	18mS	£399
ADA 0730	120Mb	16mS	£POA

Supplied ready assembled. No soldering required. Simply plug into the allotted space.

## Archi IDE Hard Cards

"Simply plug  
and play"



Watford's easy to instal, low cost, high performance, revolutionary IDE Hard Cards for the A300 & A400 series Archimedes.

ADA 0650	20Mb	19mS	£159
ADA 0800	30Mb	19mS	£185
ADA 0660	40Mb	28mS	£289
ADA 0810	60Mb	18mS	£339
ADA 0670	80Mb	18mS	£409

Also available 120Mb and 180Mb Cards.

Please telephone for prices.

(All above Hard Cards can be used as Removable Hard Drives. Ideal for Military and Education use.)

## Archimedes A300/A400 SCSI Hard Disc Offer (while stocks last)

100MB Hard Disc Upgrade  
complete with Controller card,  
Cables, Formatter and Manuals

RRP: £799

**Offer Price: £325**

Also available with 16-bit controller £359

**Low Cost Finance now available  
on Archimedes.  
Please telephone for details.**

## Archi to BBC Serial Link Mk 2

Using this simple data link, it is possible to solve all your BBC to Archimedes data transfer problems. The kit is supplied with a disk, and the necessary cable to connect the two computers. New RISC OS Version also available (please specify)

- For A3000 £15
  - For A5000 £16
- For A3000 Serial Upgrade (£19) required

## A3000 I/O Card (User, Analogue & IIC)

This NEW versatile I/O Card from Watford, fits inside the A3000 and includes an Analog to Digital Converter, a User Port, and an InterIC (IIC) connector.

The card allows many of the peripherals developed for the BBC to be used with the Archimedes A3000. The ADC and User Port have the same pin out and connectors as the BBC computers.

Extensive RISC OS software is supplied to provide BBC OSBYTE calls for support of the ADC and User Ports, including the BASIC keyword ADVAL. The software provides extended RISC OS support for separate interrupts from both the ADC and User Ports, permitting easy interrupt driven operation.

The card is provided with all the software in ROM and is automatically loaded when the machine is turned on.

Peripherals connected to the ports can obtain up to 500mA of power at +5V. A fuse is fitted to the card to protect the A3000 from damage arising from accidental short circuit of the power output.

### Features

- An 8 bit User Port with a standard 20 way IDC connector, compatible with the User Port on the BBC computers and the Archimedes I/O Podule.
- A 10 bit Analog to Digital Converter with a standard 15 way D type connector, compatible with the ADC on the BBC range of computers and the Archimedes I/O podule.
- An InterIC (IIC) Port with a 5 pin DIN socket to connect the A3000 to external IIC devices.

£38

**Leasing finance at very attractive  
rates now available to Businesses  
(subject to status), Schools,  
Colleges, Universities, Government  
Depts. and Local Councils.  
Minimum order £1,000.  
Please telephone for details.**

## Archimedes External Disc Drive Interface

With this interface it is possible to connect almost any 5.25"/3.5" disc drive with its own power supply to the Archimedes. Upto 4 disc drives can be connected. Fully Buffered Board. NO SOLDERING is involved. Supplied complete with necessary lead.

Price £21

### Back Plate Extension

- A300/A400 £15;
- A3000 £14

## ARM 3 Turbo Card MkII

**Simply The Best**



Here it is at last – the all new Mark 2 version of Watford's highly acclaimed ARM 3 processor board for the Archimedes and now also the A3000 series computers. Using the latest surface mount technology on a high quality four layer circuit board we have reduced the overall size to a mere 53mm x 45mm, and the cost to only £169. Mk II upgrade will increase the speed of your micro by a factor of 3 to 6.

Any competent A300 or A400/1 series micro owner can fit the upgrade himself, as we provide full fitting instructions and a special ARM chip extraction tool. However for A3000 micros and those not wishing to perform the upgrade themselves, we will collect, upgrade and return your micro by courier service, at an additional cost of £24.

(A300 and old A440 series owners please note – you will need to upgrade to MEMC1A for ARM3 to work.)

RRP £249

## Special Offer £145

Acorn have satisfactorily evaluated Watford's ARM 3 upgrade and the A3000 upgrades are fitted by Acorn approved surface mount technology centre, therefore its fitment will not invalidate Acorn's warranty on the micro.

## BBC MASTER

**MASTER 128K Micro incl. Acorn's  
View, Viewsheets, ADFS, BASIC Editor  
& TERMINAL**

£329

## Add-Ons & Accessories

Econet Module for the Master	£42
Twin ROM Cartridge for Master	£9
Quad ROM Cartridge for Master	£14
Master Reference Manual I	(No VAT) £14
Master Reference Manual II	(No VAT) £14
Master Advance Ref Manual	(No VAT) £14
64K Upgrade Kit for B+	£32
ECONET Upgrade Kit for BBC B	£42
ALL ECONET UPGRADES Available	
ARIES' IEEE Interface for BBC B & Master	£238

**Continued → → → → → → → → →**

## BBC Education Software

<b>A vous la France</b>	French programs for beginners	£29
<b>Au restaurant/Accident de route</b>	French games for 12 years +	£26
<b>Bolougne and oh les</b>	French program for beginners	£26
<b>Computer control</b>	Program simulating computer control	£26
<b>Computers at work</b>	Primary education program	£17
<b>Espana Viva</b>	Spanish educational programs	£20
<b>Folks Tales</b>	Listening and reading for ages 7+	£22
<b>Geordie Racer</b>	Look and read for ages 7+	£22
<b>Hall of Mirrors</b>	Practice word & number skills	£22
<b>Help your child learn basic mapwork 2</b>		£18
<b>Inside Science</b>	Four common science subjects	£22
<b>Letters and pictures</b>	Educational programs for 6-8 years	£15
<b>Make a wildlife garden</b>	Explore wildlife/whether/garden growth	£22
<b>Maths with a story 1</b>	Primary level maths programs	£20
<b>Maths with a story 2</b>	4 further maths programs	£20
<b>Note invaders</b>	Learn sheet music for 7-Adults	£15
<b>Numbers &amp; Pictures</b>	Early number learning (4-6 years)	£15
<b>Picture craft</b>	Geometrical design & Colouring	£17
<b>Puncman 1 &amp; 2</b>	Learning Punctuation (7-13 years)	£15
<b>Puncman 3 &amp; 4</b>	Learning Punctuation (8-14 years)	£15
<b>Puncman 5, 6 &amp; 7</b>	Learning Punctuation (8-15 years)	£15
<b>Ramayana Tales</b>	Simple Desktop Publisher using pictures & characters from the Ramayana	£22
<b>Skyhunter</b>	Look and read educational adventure	£22
<b>Technology and design</b>	Problem solving programs	£22
<b>Through the dragons eye</b>	Adventure game and Map reading	£22
<b>Fun School 3 (Under 5)</b>	Varied range of Education subjects	£17
<b>Fun School 3 (5-7)</b>	Varied range of Education subjects	£17
<b>Fun School 3 (Over 7)</b>	Varied range of Education subjects	£17

## Archi Educational Software

• Animated Alphabet (3-6 yrs)	£21	• Glimpse Clip Art Utility (7-16 yrs)	£8
• Arcventure (8-12 yrs)	£29	• Highlighter (6-16 yrs)	£42
• Bookbinder	£43	• Jigsaw	£28
• Bumper Disc	£14	• Mapventure (9-13 yrs)	£24
• Bumper Disc 2	£14	• Microbugs	£24
• Craftshop 1	£26	• Money Matters	£16
• Craftshop 2	£26	• Nature Park Adventure (7-9 yrs)	£27
• Converta-Key	£16	• Numerator	£60
• Data Word	£16	• Picture Book	£16
• Desktop Stories	£35	• Recall (6-13 yrs)	£39
• DigiSim	£35	• Sellardore Tales	£24
• Dream Time (5-7 yrs)	£23	• Snippet	£26
• Farm (5-7 yrs)	£19	• Space Mission Mada (9-13 yrs)	-
• Fleet Street Phantom (9-13 yrs)	£25	• Sting of the Dump (9-13 yrs)	£22
• Fun School 3 Red (up to 6 years)	£17	• Target Maths	£16
• Fun School 3 Green (6-8 years)	£17	• Viewpoints (9-12 yrs)	£33
• Fun School 3 Blue (8 years +)	£17	• Wizard's Revenge (7-10 yrs)	£17
• Gate Array Teaching System	£68	• Worst Witch (7-10 yrs)	£25

## Archimedes Software

GRAPHICS		Omar Sharif's Bridge	
3D Construction Kit	£39	Pandoras Box	£18
Arc Light	£46	Pipe Mania	£17
ARCTist	£19	Play It Again Sam	£-
ARCTiculate	£19	Populous	£23
Art Works	£139	Puncman 1 & 2	£16
Atelier	£60	Puncman 3 & 4	£16
Artisan II	£45	Pysanki	£14
Artisan Gallery	£16	Quazer	£10
Autosketch II	£65	Real McCoy 2	£23
CADet (CAD)	£140	Real McCoy 3	£22
Clip Art Set 1	£28	Redshift	£14
Clip Art Set 2	£28	Return to Doom	£16
Concept Designer	£23	Repton 3	£14
Craftshop 1 & 2	£28	Saloon Cars Deluxe	£27
Euclid 2	£50	Sim City	£19
Graph Box	£59	Spitfire Fury	£22
Graphbox Professional	£107	Splice	£25
HotLink Presenter	£40	Sporting Triangles	£24
Illusionist	£69	Superior Golf	£14
Kermit	£46	Superpool + Break 147	£22
Mogul	£17	Swiv	£19
PCAD Educ.	£395	Talisman	£12
Poster	£79	Timewatch	£24
Pro Artisan	£70	Trivial Pursuit	£22
ProCAD	£475	Twin World	£15
Prime Art	£46	U.I.M.	£23
Render Bender 2	£79	White Magic 2	£15
Revelation 2	£80	Worldscape	£16
Snippet-New	£32	XFire	£19
Titler	£119	Zelanites	£23
Tween	£29	Miscellaneous	
GAMES		Ancestry	£59
Air Supremacy	£17	Arccomm 2	£38
Apocalypse	£14	Arcterm 7	£64
Arcade 3 Compilation	£12	Armadeus Sound	£60
Battletank	£10	Avante Garde Fonts	£23
Black Angel	£27	BBC DFS Reader	£6
Boogie Buggy	£14	Broadcaster Loader	£65
Break 147 + Supa Pool	£19	Chameleon	£34
Bughunter in Space	£12	Chatter	£34
Bughunter/Moondash	£10	Compression (CC)	£38
CADet	£135	Craftshop 1	£27
Casino	£10	Craftshop 2	£27
Cataclysm	£19	Equasor	£38
Caverns	£10	FlexiFile	£97
Chess 3D	£16	Genesis	£15
Chocks Away	£27	Genesis Plus	£68
Compendium	£32	Genesis 2	£99
Chocks Away Extra	£14	Investigator 2	£22
Chuck Rock	£18	Maggie 2	£42
Conqueror	£15	Notate	£42
Corruption	£18	Numerator	£66
Cyber Chess	£38	Pin Point	£65
Ego Repton 4	£-	Presenter 2	£29
Elite	£33	Presenter Story	£145
Enter the Realm	£19	Prophet Accounts	£132
E-Type Compendium	£20	Prophet Demo Disc	£10
E-Type Designer	£13	Rainforest	£17
Family Favourites	£13	Revelation 2	£95
Galactic Dan	£19	Rhapsody in Blue 2	£45
Gods	£24	Score Draw	£46
Grievous Bodily Arm	£19	Show Page	£127
Holed Out Designer	£13	Speech!	£15
Holed Out Golf Comp	£20	The Victorian	£17
Hostages	£14	Time Tabler	£549
Inter Dictor 2	£26	Toolkit (Clares)	£35
Iron Lord	£15	Touchtype	£40
Jahangir Khan Squash	£19	Tracker	£39
Jigsaw	£27	Turbo Driver BJ10E	£42
Lemmings	£20	Type Studio	£43
Oh no more Lemmings	£15	Vox Box	£46
Lost Temple	£15	WorldScape	£17
Lotus Turbo Challenge	£19	LANGUAGES	
Mad Prof Mariarti	£17	Desktop C	£199
Masterbreak	£16	Macro Assembler	£40
Man at Arms	£14	Robo Logo	£69
MahJong Patience	£15	BASIC Compiler	£77
Manchester United II	£19	Logotron Logo	£45
Mig 29	£24	Risc BASIC	£120
Nebulus	£21	Risc FORTH	£110
Nevryon II	£20	Cambridge Pascal	£95

## Minerva's Archimedes Software

EasyWord	£18	Time Tabler	£549
Home Accounts	£35	System Delta	£59
System Delta Program Reference Manual	£29		
Stand alone Business Accounts Packages			
Sales; Purchase; Order Processing and Invoicing; Nominal; Stock management			
£79 per module			
or Complete Business Package			
£325			

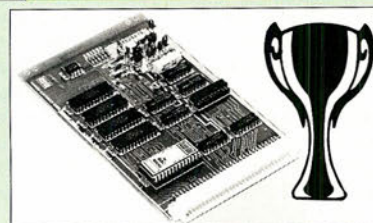
## Cortian CKAI Interface

Eliminates the need to have a User port in A3000, A5000 and any other Archimedes without User Port. Fits to the Econet socket. £29

## Concept Keyboards

• A4 Standard Pack	£95
• A4 Primary Pack	£100
• A4 Designer Pack	£110
• A3 Standard Pack	£99
• A3 Primary Pack	£105
• A3 Designer Pack	£110
• Universal 2010 Keyboard A3	£115
• Universal 2010 Keyboard A4	£110

## Archi Real-Time Digitiser



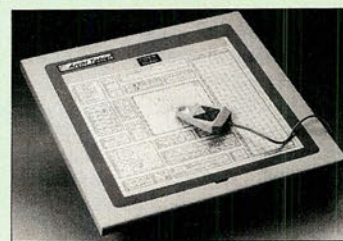
Now supplied with NEW RISC OS Version Software

Watfords' Archimedes Video Digitiser is the most sophisticated digitiser ever designed for a micro. It provides a fast and flexible means of capturing images from a video camera or recorder for display and manipulation on the Archimedes range of Micros. Off-air television signals may also be digitised via a video recorder or TV tuner. Please write for further details.

**Price £99**

A Set of Colour Filters for colour image grabbing using a video camera £16

## Archi Graphic Tablet



**Special Price £199**

(Price includes Tablet, Leads, Software & Puck) Stylus Optional Extra £20

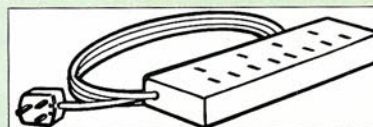
**Archi Graphic Tablet Junior. Working area 9" x 6". Price includes Stylus £105**

## Surge Protector Plug

Fitted in place of your normal mains plug, this device protects your equipment (and data from corruption), against mains high voltage transient spikes/surges caused by lightning or thermostats switching.

Protection for only £8.50

## 4 Way Mains Distribution Socket



4 way top quality mains trailing sockets. Supplied wired up with mains plug ready for use. Can be screwed to floor or wall if required. Very useful for tidying up all the mains leads from your peripherals.

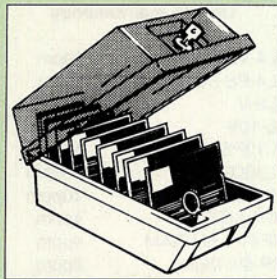
£9.50

## Aries Spike Cleaner Unit

A 4 way mains distribution unit as above with a built-in Surge Arrester, providing protection for your complete Computer/Hi-Fi System

£16

## Antistatic Lockable Disc Storage Units



- **M35** – holds up to 50 5.25" discs £4.95
- **M85** – holds up to 95 5.25" discs £6.95
- **M25\*** – holds up to 25 3.5" discs £4.95
- **M50** – holds 50 3.5" discs £6.50
- **M100** – holds 100 3.5" discs £6.99
- **M10** – holds 8 of No. 10 Data Cartridges £15

\* Not lockable

## Disc Plonker Rack

When using ones micro, there is a tendency to have more than one Disc on the desk. This exposes them to the hazards of fingerprints, scratches, dust, coffee and an untidy desk. Why not protect your valuable data from all these hazards with the help of our extremely handy and low cost DISC PLONKER RACK. Holds up to eight 5.25" discs.

Protection at Only: £2



## 3M – Diskettes

Lifetime warranty on 3M Discs

- 10 x 5.25" S/S D/D 40T (744) £5
- 10 x 5.25" D/S D/D 40T (745) £5
- 10 x 5.25" S/S D/D 80 Track (746) £6
- 10 x 5.25" D/S D/D 80 Track (747) £7
- 10 x 5.25" 1.6M D/S D/D High Density for IBM XT and AT £8
- 10 x 3.5" S/S D/D 40/80 Track £6
- 10 x 3.5" D/S D/D 40/80 Track £6
- 10 x 3.5" Double Sided High Density £10

## Top Quality Diskettes

Watford's life time guaranteed disc are supplied complete with self stick labels & plastic library case.

- 10 x **M3** 3.5" D/S D/D 80 Track £6
- 10 x **M9** 3.5" D/S High Density £10
- 10 x **M4** 5.25" S/S D/D 40 Track £5
- 10 x **M5** 5.25" D/S D/D 40 Track £5
- 10 x **M7** 5.25" D/S D/D 80 Track £6
- 10 x **M8** 5.25" D/S H/D Hi-Density £9
- **M2** 3" Double Sided £2.50 each

## Special Bulk Offer Discs

(Lifetime warranty on Discs)

### BULK PACK DISCS in lots of 100

Type	S/S 40T	D/S 40T	D/S 80T
• Without Sleeves 5.25"	£25	£30	£35
• With Sleeves 5.25"	£28	£33	£38
• 3.5" D/S D/D	£21 for 50	£39 for 100	
• 3.5" D/S H/D	£40 for 50	£75 for 100	

## 3.5" Disc Drive



These top quality 3.5" Double sided, 80 track, are attractively finished in BBC beige. They are supplied complete with all cables and a Utilities Disc.

Type	Description	
• <b>CLS35:</b>	Single Disc Drive, 400K	£59
• <b>CLD35:</b>	Twin Disc Drives, 800K	£109
• <b>CS35:</b>	Single Disc Drive, 400K	£82
• <b>CD35:</b>	Twin Disc Drives, 800K	£126

(P.S. CS35 is supplied in a twin case with a blanking plate to enable easy expansion to a dual drive at a later stage)

## Disc Drives in Monitor Stand



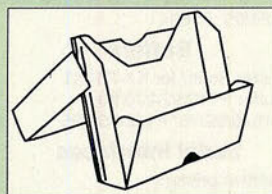
• **CDPM 800S** – Twin 5.25", 800K Double sided 40-80 track switchable disc drives mounted in an attractively finished Beige colour plinth for the BBC B & Master 128K micros. Supplied complete with integral power supply, cables and Utilities disc. The mains switch with neon On/Off light indicator, and the two 40/80 track switches are mounted on the front panel for ease of use.

£165

• **DP35 800** – Same as above except, one disc drive is a 5.25" and the other is 3.5".

£154

## Plastic Library Cases



- DLC1** – Holds 5 x 3.5" Discs. £1.50
- DLC2** – Holds 10 x 3.5" Discs. £1.90
- DLC3** – Holds 5 x 5.25" Discs. £1.60
- DLC4** – Holds 10 x 5.25" Discs. £2.00

## Disc Albums

Attractively finished in leather-look PVC Vinyl

- DW1** – Holds 6 x 3.5" Discs £2.50
- DW2** – Holds 6 x 5.25" Discs £3.00
- DW3** – Holds 20 x 5.25" Discs £3.50
- DW4** – Holds 40 x 3.5" Discs or 5.25" Discs £4.50

## Floppy Head Cleaner Kit

The heads in floppy drives are precision made and very sensitive to dirt. The use of Cleaner Kit is a sensible precaution against losing valuable data. It is recommended to clean the drive head once a week. It is very simple to use. Available in 3.5" & 5.25", please specify.

Price £4

## Acorn & Watford DFSs

- Watford sophisticated DFS ROM £16.00
- Watford DFS Kit complete £49.00
- DFS Manual (comprehensive) £6.95
- Acorn DNFS ROM £17.00
- Acorn ADFS ROM only £25.00
- Acorn 1772 DFS ROM Kit £49.00
- Acorn DFS Kit complete £48

## Watford's MkII 1772

### Single/Double Density DFS

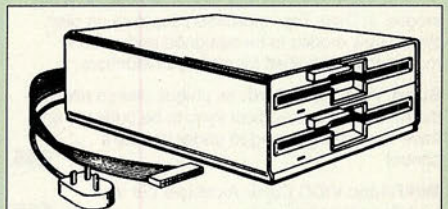
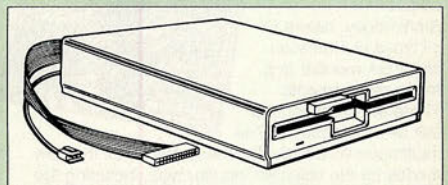
Many of our customers have wanted to use our superior DDFS and Acorn ADFS together. Now our Mk II DDFS Board with its 1772 Disc Controller, has been adapted to allow the use of Acorn ADFS as well. It also has all the commands of the Acorn's 1772 DFS, plus many more added features.

- Complete Kit Special Price £44
- DDFS Manual (No VAT) £6.95
- We will exchange your existing DFS Kit for our sophisticated DDFS for only £26

## Quality Disc Drives from Watford

All our Disc Drives are Double Sided and will operate in both Single and Double Density modes. All 5.25" Disc Drives are 40/80 track switchable. For ease of use, the switches are front mounted. Follow the trend with a Watford plinth. (Turn to the 6th page of our advert for the Plinths). P.S. All our 5.25" Disc Drives with PSU are compatible with the Compact Micro. All you require is our special Compact Disc Drive cables designed by us.

## "Test Bureau Approved for Use in Education"



## Our Disc Drives conform to BS415

Type	Description	
• <b>CLS400S:</b>	Single, 40/80 track 400K Double sided Drive	£70
• <b>CLD800S:</b>	Twin, 40/80 track, 800K Double sided Drives	£138
• <b>CS400S:</b>	Single, 40/80 track, 400K Double sided Drive	£80
• <b>CD800S:</b>	Twin, 40/80 track, 800K Double sided Drives	£149

Special Cable to connect both 3.5" and 5.25" Disc Drives simultaneously to the BBC Compact £13

Continued → → → → → → → → →

## Microvitec Monitors

- 1431 - Standard Resolution Monitor #£169
  - 1451 - Medium Resolution Monitor #£209
  - Cub3000 Medium Res for A3000 #£189
  - Dust Cover for Microvitecs £5.50
  - Touchtec 501 Touch Screen £239
  - Touchtec 3000 £-
- # Includes 3 years parts & labour warranty

## Multiscan Colour

- Eizo F550i £726
- Eizo T560IT £1319
- Eizo T660i-T 20" £1615
- NEC 3FG £345
- NEC 4FG £442
- NEC 5FG £823
- NEC 6FG £1485
- Taxan 787 £225
- Taxan 787LR £245
- Taxan 795PC £415
- Taxan 875 £715
- Taxan 875+ £745
- Taxan 970 £1195
- VIDC Enhancer £25

## Aries AlphaScan Monitor

Its multiscan circuitry provides automatic adjustment for frequencies between 30 and 60KHz horizontal, and 50 and 90Hz vertical. Its 0.28mm dot pitch high resolution tube provides super sharp text graphics, while a high speed (70/72Hz) refresh rate provides a flicker-free display easing the eye strain. The VIDC Adaptor supplied with the monitor allows high resolution operation in all screen modes.

- Aries Alphascan 17" Plus

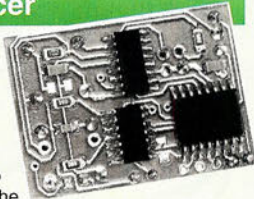
£325  
£545

## Philips Monitors

- BM7502 12" Hi-res Green Monitor £82
- CM8833 14" Med. Res Colour Monitor £185
- Dust Cover for Philips Monitors £6
- Spare Monitor Leads (various) £7

## VIDC Enhancer

This unique VIDC add-on board for the Archimedes, caters for all types of Multiscan and VGA monitor and mode requirements. There are 2 versions to suit all requirements. The multimode software supplied, provides all the new modes for the selected monitor type, including the now standard Computer Concepts modes. With VGA monitor, you are no longer restricted to a few modes. A Desk Top application supplied on disc, allows new modes to be designed and existing modes to be modified for particular monitors.



**Super VGA VIDC Card:** Its unique design allows the horizontal and vertical sync to be buffered and have the polarity changed under software control

£45

**MultiVideo VIDC Card:** As above but for MultiScan monitors only.

£25

## Integrex Ink Jet Printers

- Colour Jet 132 Printer £425
- Paper Roll £6.50
- BBC Screen Dump Software £10
- Colour Cartridge £21 • Black Cartridge £12.40
- 100 A4 OHP transparencies £55
- 8K Serial Interface Optional £123
- Colour Jet 2000 £529
- Betajet Ink Jet Printer £185
- Betajet Cut Sheet Feeder £43
- Integrex Colourjet Series 2 £335

## Printer Leads

- BBC Centronics 4' £5; 6' £6
- Archi Parallel 2m £5; 5m £9 10m £13
- PC Parallel 2m £5; 5m £9; 10m £13
- 25 pin D Male/Male 2m £5; 5m £10
- Centronics Double Ended 4' £5
- Centronics Double Ended 6' £6
- RS232 Leads Various £POA

## Star Printers

- LC15 £190 LC200 Colour £151
- LC20 £104 SJ48 Inkjet £169
- LC100 £126 XB24-200 Colour \*£324
- LC24-15 £245 XB24-250 Colour \*£389
- LC24-20 £148 XB24 Colour kit £29
- LC24-100 £143 ZA200 Colour \*£260
- LC24-200 £165 ZA250 \*£295
- LC24-200 Colour £214 ZA250 Colour £324

- Star/Archimedes Colour Printer Driver £15
- \* Includes 12 months On-site warranty

### Cut Sheet Feeder

- LC10/200/24-10 £49 LC15/LC24-15 £119
- XB24-10 £80 XB24-15 £139
- XB24-200 £99 XB24-250 £149

### Serial Interfaces

- 8K Ser LC-200; LC24-200; FR10; FR15; XB24-10; XB24-15 £52

### Buffers

- 32K Ram Card for LC/XB24-10; 15; LC200 £55
- 32K Ram Cartridge for LC24 £54

### Star Printer Ribbons

- LC10; LC10-II; LC15 Black £4; Colour £6
- LC-200; LC24-200 Black £5; Colour £12
- XB24-10; XB24-15 Black £5; Colour £12
- Dust Covers for Star Printers £6

## NEC Pinwriter Printers

- P20# £165 • P72 £406
- P30 £235 • P90 £579
- P62 £342

- P60/70 Colour Option Kit £59
- Ribbons Black for P20; P30 £6
- Ribbons for P60/70/90 Black £8 Colour £13.50

# Includes 12 months on-site warranty

### Cut Sheet Feeders

- P20 £59; P30 £85; P60/62 £89; P70/90 £80

## Panasonic Printers

- KX-P1123 £126 KX-P2624 \*£269
- KX-P1170 £98 KX-P2123M £144
- KX-P1624 £264 KX-P2123C £194
- KX-P1654 \*£330 KX-P2180M £126
- KX-P1695 £267 KX-P2180C £143
- KX-P2124 £215

\* Price includes 12 months On-site warranty

### Cut Sheet Feeders

- P36 - 1124/24i £69 P37 - 1123/70/80 £59
- P38 - P1624/95; P2624 £126

### Buffers

- P12 4K Buffer Board for KX-P1081 £55
- P14 32K Buffer P1123/24/70/80 £16
- P1540/92/95; P1624/54/95

### Serial Interfaces

- P13 for all above printers £46

### Original Panasonic Ribbons

Guaranteed to last 3 million characters

- for P1081, 1180, 1123, 1124, 1170 £6
- for P1624, 1695, 2123/24, 2180, 2624 £8
- Colour Ribbons for KX-P1081, 1592 & 1595 £9 each
- Brown, Blue or Red
- P150C Colour for P2123/2180 £15
- Dust Covers for all 80 column Panasonic Printers £5

## Citizen Printers

- 120D+ £98 • Swift 200 £178
- Swift 9 £145 • Swift 240 £200
- Swift 9X £185 • Swift 240C £212
- PN-48 £189 • Swift 24X £299

- AH29804 Manual Cut Sheet Feeder for Swift 9/24/124. Holds 50 Sheets £29
- Cut Sheet Feeder for 80 col. printers £75

+ FREE 2 years Parts and Labour warranty on all Citizen Printers

- Swift 9 Colour Option £19
- Swift 24 Colour Option £29
- Swift 24 Ribbons Black £4 Colour £13
- Swift 24X Ribbons Black £8 Colour £16
- Citizen/Archimedes Colour Printer Driver £15

## Laser Printers

All Laser Printers include 12 months On-site maintenance

- Brother HL4-VE 4ppm £589
- Brother HL4-PS Postscript 4ppm £970
- Brother HL8-V 8ppm £848
- Brother HL-10V 10ppm £1045
- Brother HL10PS 10ppm £1329
- Brother HL10DV 10ppm £1149
- Brother HL10DPS 10ppm £1445
- Canon LBP4 LITE 4ppm £479
- Canon LBP4+ 1.5M RAM 4ppm £639
- Canon LBP-8III Plus 8ppm £945
- Canon LBP-8 plus IIIR 8ppm £1435
- Canon LBP-8 4 8ppm £989
- Epson EPL4300 6ppm £589
- Epson EPL4000 6ppm £478
- Epson EPL5200 6ppm £575
- Epson EPL7500 6ppm £1139
- Epson EPL8100 10ppm £920
- Fujitsu VM800 (Best Buy) 8ppm £549
- HP Laserjet IIP+ 4ppm £530
- HP Laserjet IIID 8ppm £1482
- HP Laserjet IIIP 4ppm £595
- HP Laserjet IIISi PS 16ppm £1993
- HP Laserjet IV (600 dpi) 8ppm £1035
- HP Laserjet 4M PS 8ppm £1425
- NEC Silentwriter S62P P/script 6ppm £994
- NEC Silentwriter 266 8ppm £669
- NEC Silentwriter 290P P/script 8ppm £1459
- NEC Silentwriter S102 8ppm £992
- OKI OL400 4ppm £440
- Panasonic KX-P4410 5ppm\* £459
- Panasonic KX-P4420 8ppm\* £615
- Panasonic KX-P4430 Satin Print\* 5ppm\* £589
- Panasonic KX-P4451 11ppm\* £899
- Panasonic KX-P4455 Postscript 11ppm\* £1249
- Star LP-4 Postscript - £774
- Star LP-8 III 2 8ppm £1249
- Star LP-8 III 8ppm £899
- Star LP-8 Star(post)script 8ppm £1130
- Star LS-5 5ppm £489
- Star LS-5 EX (RISC Based) 5ppm £599
- Star LS-5 TT True Type + Mac 5ppm £799

\* Now with 2 years On-site warranty

### Laser Toners

- Canon 2, 3 & 4 £46 Laserjet HP IIP & IIIP £42
- Epson GQ £13 Laserjet II/D, III/D £48
- EPL4/41/4300 £55 Laserjet 4 & 4M £75
- EPL7100/7500/ 8100 £117 NEC SWriter £78
- KX-P4420/50/55 £20 Star LP4/LP8 £42
- Qume Crystal (3) £85

### Laser RAM Upgrades

- IIP; III/P 1Mb £49 Canon LBP4 1M £105
- IIP; III/P 2Mb £80 Canon LBP8 2M £125
- IIP; III/P 4Mb £132 EPL7100 256K £39
- II & IID 1Mb £60 GQ5000 512K £42
- II & IID 2Mb £96 KX4420/50i 1M £75
- II & IID 4Mb £142 KX4420/50i 2M £115
- HP4 2Mb £73; 4M £115 KX4420/50i 4M £195
- NEC S62P/S102 Star LP8 1M £139
- 1Mb £99; 2Mb £180 Star LP8 2M £275

### Laser Drum & Developer

- Epson Drum GQ5000 £93 EPL7100 £129
- Panasonic 4420 Drum £60 Developer £80
- Panasonic 4450 Drum £93

### Jetpage Postscript Cartridge

- HP IIP/III £225 IID & IIID £227

### Various Add-Ons

- HP Adobe costscript + Cartridge £359
- HP Premier Font Collection £28
- Laserjet various Font cartridges from £45
- Canon LBP-4 Lower Cassette Tray £75
- HPIIP/IIIP Lower Cassette Tray £96
- Laserjet 4 Powered envelope feeder £199
- LP4 500 Sheet paper cassette 3rd Bin £205

## Laser Direct

P.S. We have now discontinued Laser Direct as the Hewlett Packard Laserjet 4 printer offers better facilities at a lower price. See above.

## Hewlett-Packard Printers

DeskJet 500	#£265	DJ Portable	£283
DJ550 colour	#£429	DJ500 colour	#£329
Paint Jet XL	+£1185	Paint Jet	+£495
QuietJet	+£312	PaintJet XL300	+£1775

+ Includes 12 months on-site warranty  
# Includes 3 years extended parts & labour warranty  
• For additional £49, we will convert above 3 years warranty, to 3 years on-site maintenance warranty  
• Paintjet Cartridges Black £14; Colour £23

### Desk Jet 500 Accessories

• 256K RAM Cartridge	£69
• HP Epson FX Emulation Cartridge	£45
• DeskJet 500 Cart. Black £14; Colour	£23
• High Capacity Black Ink Cartridge	£21
• DJ500 Colour Archimedes Printer Driver	£15
• Dust Cover	£6
• DJ500C Printer Driver for RISC OS 2/3	£15
• DJ550C Printer Driver for RISC OS 2/3	£15
• 636G 50 x Transparencies A4	£32
• 636J 50 x Glossy Paper A4 (also XL)	£25
• 630Z 50 x Cut Sheet Paper A4	£12

### HP Paintjet/XL Accessories

• 630P 200 Z-Fold paper 8.5 x 11	£15
• 630Q 50 Transparencies 8.5 x 11	£32
• 630S 50 Transparencies A4	£32
• 630Y 200 Cut Sheets 8.5 x 11	£14
• 631Y 200 Cut Sheets A4	£18

### Plug In Font Cartridges for DJ 500

• 22706B - Prestige, Elite, Line Draw fonts	£55
• 22706C Letter Gothic & HP Line Draw fonts	£56
• 22707P - Proprint Emulation Cartridge	£57
• Desk Jet Unlimited (Book No VAT)	£19.75

## Canon Bubblejet Printers

Printer	CSF	2nd Bin	Ink Cart
BJ10EX	£160	£43	£16
BJ10SX	£105	£43	£16
BJ200	£282	—	£16
BJ300*	£292	£88	£12
BJ330*	£369	£110	£12
BJC800C	£1329	—	£16

\* Includes 12 months On-site warranty

• Spare Battery pack for BJ10E	£33
• BJ10EX - Archi Turbo Driver	£42

### Special Offer:

Canon BJ10EX Printer + CC's Turbo Driver	£199
--	------

## Epson Printers

FX870	£273	LQ2550+	£673
FX1050	£343	LX100	£116
FX1170	£339	LX400	£94
LQ100	£147	LX850+	£135
LQ570	£199	LX1050	£203
LQ870	£359	Stylus 800	£244
LQ1060 Colour	£585	SQ870	£409
LQ1070	£310	SQ1170	£560
LQ1170	£434		
• Original Ribbon for LQ100			£6

### Cut Sheet Feeders for

LQ570, LQ870	£47
LX400/850/LQ200/400/450/500/550	
LQ1010/1070/1170	£72
LX1050	£115
FX850/LQ860	£128
FX1050/LQ1060/SQ850	£155
LQ2550	£299
SQ2550	£210

### Tractor Feed for

LQ100	£29;	LQ800	£44;	LQ850/FX850	£69;
LQ1050/FX1050	£85;	LQ2500	£90;		
LQ2550	£90.				

### Accessories

• EX800/1000 Colour Option	£45
• EX800/1000 Colour Ribbon	£14
• LQ2500 Colour Option	£65
• Multifont Card for LQ550/850/1050	£95

### Epson Printer Interfaces

RS232	£28	RS232 + 2K Buffer	£52
-------	-----	-------------------	-----

## Roland Plotters

• DXY1100	£469	• DXY1200	£607
• DXY1300	£823	• DXY2500	£2345
• Sketchmate A3	£499	• Sketchmate A4	£308
• Roland plotter Pens, Fibre tip			£7.50

## Fujitsu Printers

### Special Introductory Offer

- B-100 InkJet - HP Deskjet compatible 300dpi, whisper-quiet & 6 resident fonts **#£159**
- B-200 InkJet - HP Desk Jet compatible 300dpi. Built in Cut Sheet Feeder. Optional 2nd Bin/Tractor available **#£249**
- DL-1150 Dot Matrix - 24 pin, 110 column Colour optional **£199**
- DL-1150C Dot Matrix - 24 pin, 110 column With colour option **£244**
- DL1250 **£309**
- DL4600C **£799**
- DL5800 **£999**
- DL3600 **£439**
- DL5600C **£1049**
- DL1250C **£344**

# FREE 1 Year On-site maintenance.

- B-100 Cut Sheet Feeder **£59**
- B-200 2nd Bin Sheet Feeder **£89**
- B-200 Tractor Unit **£59**
- B-100/200 Ink Cartridges **£14**
- DL-1100 Colour Upgrade **£39**
- DL-1100 Black Ribbon **£5**
- DL-1100 Colour Ribbon **£11**
- VM 800 Toner Cartridge (8000 pgs) **£99**

Full range of Fujitsu Printers available at very competitive prices. Please telephone for details

## Listing Paper (Perforated)

- 1,000 Sheets 9.5" x 11" Fanfold Paper **£7**
- 2,000 Sheets 9.5" x 11" Fanfold Paper **£11**
- 1,000 Sheets 9.5" x 11" NCR 2 Part Fanfold **£21**
- 1,000 Sheets 15" x 11" Fanfold Paper **£9**
- 2,000 Sheets 15" x 11" Fanfold Paper **£16**
- 1,000 Sheets true A4 Fanfold Paper 70gms **£11**
- 2,000 Sheets true A4 Fanfold Paper 70gms **£21**

(All our Fanfold paper is Micro perforated leaving a smooth clean edge when the tractor feed strips are detached).

Carriage 1K Sheets £2.50, 2K Sheets £3.00

## Printer Labels

### (On continuous fanfold backing sheet)

1,000 off, 90 x 36mm (Single Row)	£6.00
1,000 off, 90 x 36mm (Twin Row)	£6.25
1,000 off, 90 x 49mm (Twin Row)	£7.50
1,000 off, 102 x 36mm (Twin Row)	£6.75

### Laser Printer Labels on A4 Sheets

3750 off, 70 x 29mm (3 Rows x 10)	£15.50
2400 off, 70 x 37mm (3 Rows x 8)	£15.25

## Printer Ribbons & Various Dust Covers

Type	Ribbons	Dust Covers
BBC B/BBC Master	—	£4.00
Archimedes Micro pair	—	£9.00
Citizen 120D	£3.25	£5.00
EX800/1000	£3.50	£5.00
RX/FX80/85/800/MX80	£2.95	—
FX/MX/RX100/1000	£3.95	—
Kaga/Taxan KP810/815	£3.25	£5.00
LQ400/500/550/800/850	£3.25	£6.00
LQ1050/LQ2500	£12.00	—
LX400/800/850	£3.50	£5.00
M1009/GLP	£2.95	£3.75
NEC P2200	£4.50	£5.00
Panasonic 80 Col. Printers	—	£6.00

Dust covers for most 80 column printers available at £5 each

## Professional Printer Stand



The professional printer stand takes hardly more space than your printer. Due to the positioning of the paper feed and re-fold compartments ie. one above the other, the desk space required for your printer functions is effectively halved. Its ergonomic design ensures smooth paper flow and automatic refolding.

80 Column version £24 (carr. £3)  
132 Column version £29 (carr. £4)

## Universal Printer Sharers/Changer

Connect up to 5 Micros to 1 printer or 5 printers to 1 Micro with our combined, Sharer/Changer switch boxes.

### Standard Low Cost Type

Connects	Serial	Parallel
• 2 to 1	£10	£10
• 3 to 1	£14	£15
• 4 to 1	£19	£20

### Professional Type

Connects	Serial	Parallel
• 2 to 1	£15	£16
• 3 to 1	£20	£23
• 4 to 1	£30	£34

Cables extra at £5 each

## Cross Over Manual Switch

2 In/2 Out Parallel	£29
2 In/2 Out Serial	£28
3 In/2 Out Serial	£36

## Auto Printer Sharer

Connects	Serial	Parallel
2 to 1	£34	£36
4 to 1	£52	£53
8 to 1	—	£85

## 256k Multi Spooler

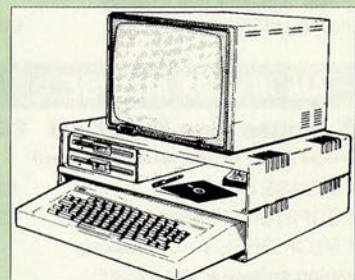
These Auto Parallel Printer Sharers have built-in 256K of Printer Buffers. They can be used as Auto Sharers, Printer Buffers or both.

• 2 In/2 out	£125	• 4 In/2 out	£139
• 8 In/1 out	£185		

## Compact Converter Units

Serial to Parallel	£32	Parallel to Serial	£32
--------------------	-----	--------------------	-----

## Plinths for the BBC Master and A3000



- Single Master Plinth 490 x 310 x 105mm **£14**
- Double Master Plinth 490 x 310 x 210mm **£26**
- A3000 Single Plinth (very sturdy & precision made), has a slot on the left for the switch & cut out on the right for 3.5" Disc Drive **£15**

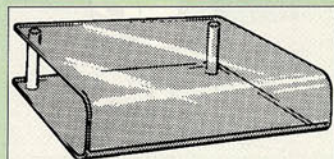


## CREDIT CARD 24 HOUR

### Ansaphone Hot Lines

(0923) 250234 or 233383

## Perspex Printer Stand



Give your Computer System a touch of Class with our elegant, smoke finished Perspex Printer stand.

80 Column version	£16 (carr £3)
136 Column version	£20 (carr £4)

Continued → → → → → → → → →

## QUEST MOUSE Mk III



- Quest Mouse III & Quest Paint £49
  - Quest Mouse III, Quest Paint, AMX Stop Press & Pagefont £69
  - Quest Mouse III only £25
  - Quest Paint Software only £28
  - Quest Font Disc (22 Text Fonts) £15
  - Quest Mouse Mat (Red or Blue or Green please specify) £3
  - Conquest (Quest Paint Extension) ROM £24
  - Quest Colour Dump Disc – This new software allows you to print direct from Quest Paint to your Integrex Colour Printer £18
- (P.S. Quest Paint is not compatible with BBC Compact)

Quest Paint is the winner of the BBC Acorn User 1990 Award for the Best Art/Graphics software

### Mouse Cleaning Kit

To obtain trouble free operation and prolong the life of your mouse, the high tech rodent requires regular cleaning. Our deluxe mouse cleaning kit is ideal for the purpose £3

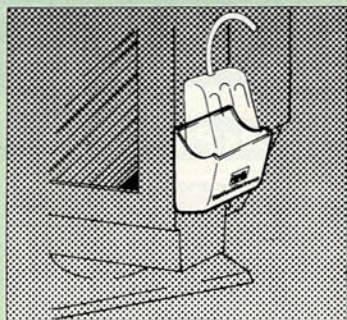
### Archi Mouse Port Splitter

Our handy little splitter unit eliminates the risk of damaging your micro due to constant plugging and unplugging of the mouse by allowing you to connect both, a joystick and a mouse simultaneously to your Archimedes. £15

### Mk III AMX MOUSE

- AMX Mouse plus Super Art £49  
(Please specify for BBC, Master or Compact)
- AMX MOUSE ONLY £25
- AMX SUPERART Package £26
- AMX STOP PRESS – A Desktop publishing software. Works with Keyboard, Joystick or a mouse £25
- PAGE-FONTS – Over 20 Fonts for use with AMX Pagemaker £13
- AMX DESIGN (ROM) £29
- AMX EXTRA EXTRA £16
- MOUSE MAT £3

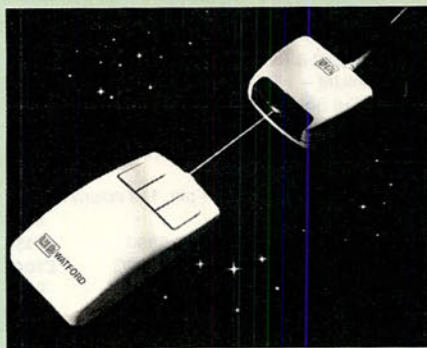
### WE Mouse House



Treat your mouse to a cosy Mouse House. This handy little gadget solves the problem of where to store your mouse when it is having a rest. Made of sturdy plastic, the WE Mouse House attaches to the side of your computer, monitor, disc drive etc.

Only £3

### Archi Cordless Mouse



#### Features

- Infra Red Signal Transmission
- High Resolution 200 DPI
- High Tracking Speed of 600mm/s up
- Anti-static Silicon Rubber Coated Ball
- Low Friction Teflon Footpads
- Power - by two AAA size batteries (not included)
- Automatic Standby Mode after 5 seconds inactive
- Auto Power Shut-Down after 20 seconds inactive

Price £32

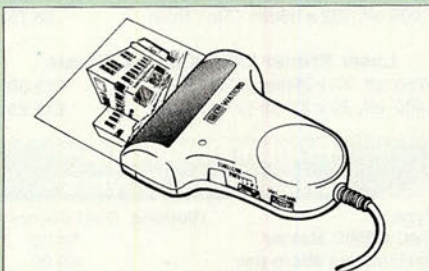
### Quest – Tracer ball

An attractively finished, extremely reliable, mouse replacement, input device. Requires very little desk space. Connects directly to your BBC B, BBC Master or Archimedes Micro.



QT-10 BBC/Master Version £25  
QT-20 Archimedes Version £26

### Beeb Hand Scanner



Watford Beeb HandScan is a compact unit which will allow photographs, diagrams, or any other documents to be digitised quickly and easily, to then be used in a desk top publishing package, art program, or even in your own Basic programs!

Beeb HandScan & Firmware £99

### Archi Mk II Hand Scanner

Watford's Mk II hand scanner has a maximum resolution of 400 dpi. The scanning width is 4". The sophisticated software is supplied in a 64K ROM, located on a standard single width expansion module. As you scan a page, the image appears in the scanning window on the screen, scrolling up in real time. Other facilities include Cropping and scaling to any size including stretching and squashing in X and Y directions separately. Colour tinting. X and Y flip. Edge detection which turns solid objects into outlines.

Images can be printed on any printer supported by RISC OS.

On-screen help is provided via the RiscOS interactive help facility. (Please write in for full technical details).

AHS-4 Archi 300/400 Version £109  
AHS-3 Archi A3000 Version £119



Winner of the BBC Acorn User 1990 Award for the Best DTP/Word Processor

### The Wapping Editor

The Wapping Editor from Watford Electronics represents a breakthrough in Desktop Publishing for the Beeb. The package includes a 64K ROM containing ALL the software needed to get into print fast; a very sophisticated graphics module, professional quality typesetting software, a word processor, a comprehensive font editor for designing your own typefaces, and a variety of printer dumps. This mouse-driven system is designed for the BBC B, the B+ and Master computers and will take full advantage of any Sideways and Shadow RAM that may be fitted. It will run under DFS, ADFS and Network filing systems and requires as a minimum just a single 40 track drive.

Wapping Editor Software Pack £49  
Wapping Editor plus Mouse £69

(Wapping Editor only works with Master Compact if a Mertec Expansion box is fitted)

### Wapping Art Disc

Over 250K of clip art to cut and paste into your Wapping Editor pages. Pictures include maps, transport, people, media, sport, games etc. Two 'ratio' screens for use with hi-res and rotated A5 pages to ensure images are not distorted when printed out. £15

### Wapping Font Disc 1

Sixteen additional fonts, including smaller version of Oberon and Daisy and two new sizes of the standard font for the Wapping editor. Also included are two Mode 0 screens containing giant 'headline' fonts to cut and paste to create extra smooth headlines.

Supplied complete with instructions. £12

### Wapping Font Disc 2

This new addition to our Wapping range of DTP software provides you with additional 23 fonts for the Wapping Editor DTP pack. (80 track discs only). £13

### Archi A4 Scanner



The 216mm scanning width can cope with both desktop scanning of single sheets, photographs, diagrams, etc., with its fast ten page automatic document feeder, but it can also detach from the feeder to become a convenient hand-held full page scanner for larger documents or pictures.

Scanned image control can be freely adjusted in increments of 10 dots per inch from 100 up to 400 dpi resolution with 64 levels of grey scaling. A built in shading controller and manual brightness control achieve optimum image clarity.

Unlike some scanners, which use a red light source, the Watford scanner uses a yellow/green source which vastly improves the light/dark contrast, thus eliminating the effect where any red-based colours are faded down to white and so do not show up in the scanned image.

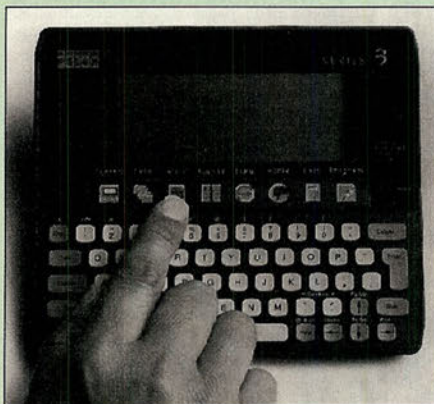
Archi A4 Scanner £269  
Sheet Feeder for above £75  
Scanner + Sheet Feeder £359

## Z88 Portable Micro



• Z88 Portable Micro	£169
• 32K RAM Pack or 32K EPROM Pack	£16
• 128K RAM Pack or 128K EPROM Pack	£32
• 512K RAM Pack	£86
• 256K Eeprom Pack	£55
• Z88 Eprom Eraser Unit	£38
• Z88 Carrying Case	£8
• AA Nicad Rechargeable Battery	£1.50
• Battery Charger Compact & Fast	£6
• Z88 Serial Printer Cable	£8
• Z88 Parallel Printer Cable	£18
• Z88 to Archi Link	£15
• Z88 to BBC Link	£8
• Z BASE	£56
• Z88 to PC Link II	£27
• Z88 to Macintosh	£32
• Z88 Mains Adaptor	£9
• Z88 Modem	£114

## Psion Series III



Psion, pioneer of the handheld computer, have once again redefined the state-of-the-art with the Series III. Although only pocket sized, this powerful programmable computer has many features found in desk top machines, plus powerful built-in software. They include a full specification wordprocessor and an outliner that is compatible with Microsoft Word, an extensive database, intelligent time and personal management and a powerful multifunction calculator. And with an interchangeable memory of up to 4Mb, you'll never be short of data storage space.

### Psion Series III Computer

- Series 3 128K £139
- Series 3 256K £179

### RAM Solid State Discs (SSD)

- 128K £68
- 512K £170
- 1Mb £255

### Flash Solid State Disc (SSD)

- 128K £34
- 256K £59
- 512K £102
- 1Mb £170
- 2Mb £255

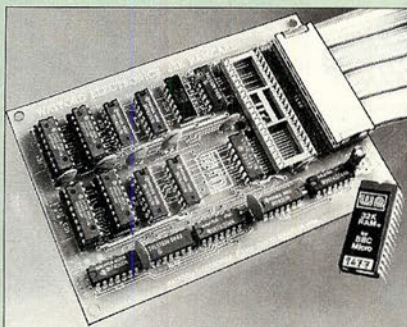
### Communications

- Parallel Interface Link £25
- RS 232 Serial Link for PC £58; Mac £59

### Various

- Mains Adaptor 9V AC £12
- Spreadsheet £59
- Professional Finance £42
- Spelling Checker/Thesaurus £42

## 32K Shadow RAM/Printer Buffer Card Expansion Board



### A MUST FOR WORD PROCESSING

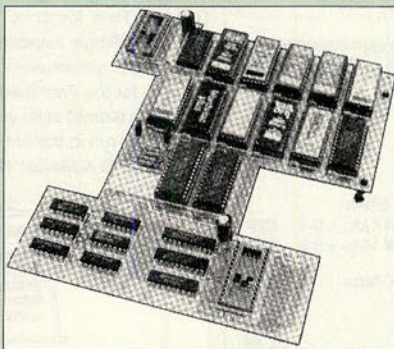
Simply plug the ribbon cable plug into the 6502 socket and gain a massive 32K of extra RAM.

- "VIEW" Wordprocessor users can now type in letters in 80 columns and have up to 28K bytes free – 5 times as much as normal.

- In WORDWISE (or WORDWISE-PLUS), preview in 80 columns with the full 24k of text in memory. This product is recommended as an ideal complement by Computer Concepts.

**Only £49**

## Solderless Sideways ROM Socket Board



- Increases your BBC Micro's ROM capacity from 4 to 16.
- **No soldering required.**
- Socket 14 takes two 6264 RAM chips.
- Read protect to make RAM "Vanish" allows recovery from ROM crashes.
- Battery backup option for RAM chips.
- Supplied ready to fit with comprehensive instructions.

**Price: Only £32**

**Battery Backup fitted £35**

**Battery Backup only £3**

**16K Sideways RAM £8**

- Sideways RAM Utilities Disc for Solderless ROM Board. Includes the options to load and save ROM Images and the facility to use Sideways RAM as Printer Buffer.

**Only: £8**

## Watford DATA DUCK

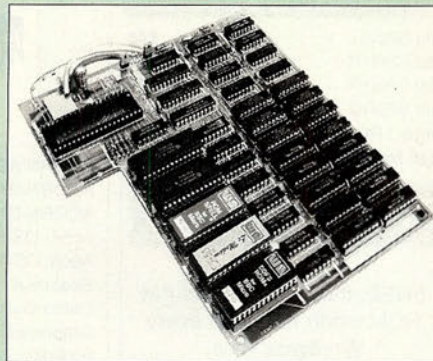
Convert two single Disc Drives into one Dual Drive with this simple external unit (Suitable for Disc Drives with PSU. For Disc Drives without PSU, you will also require Watford Power Duck, see below).

**£14**

**Watford POWER DUCK**

**£8**

## ROM/RAM Card



- No Soldering required to fit the board.
- Compatible with BBC B
- Total number of ROMs increased from 4 to 8.
- Up to 8 banks of sideways RAM (dynamic).

### PRICES:

- ROM/RAM card with 32k DRAM £39
- ROM/RAM card with 64k DRAM £52
- ROM/RAM card with 128k DRAM £83

### OPTIONAL EXTRAS:

- 16k plug-in Static RAM kit £8
- 16k DRAM for Upgrade £13
- Battery backup £3
- Read and Write protect switches £2 each
- Complete ROM-RAM card with all options fitted £99

## ROM Cartridges for the BBC Master

Will accept the larger Piggy Back ROMs like Interword, Quest, etc.

- Twin £9; • Quad £14

## Disc Drive Power Leads

Supply from BBC power supply to standard Disc Drive Connection: Single £3.00; Dual £3.75

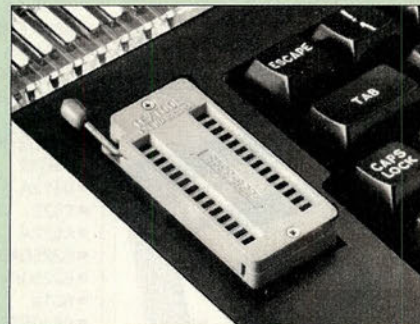
## Disc Drive Interface Leads

BBC to Disc Drives Ribbon Cable  
Single £4 Twin £6

## Miscellaneous Connectors

	Plugs	Sockets
RGB (6 PIN DIN)	50p	75p
RS423 (5 pin Domino)	70p	80p
Cassette (7 pin DIN)	40p	95p
ECONET (5 pin DIN)	35p	50p
Paddles (15 pin 'D')	150p	250p
Disc Drive Plug 4 way	100p	–
6 way Power Connector	120p	150p

## Sideways ROM ZIF Socket System



Allows you to change your ROMs quickly and efficiently, without having to open the lid. The ZIF socket is located into the ROM Cartridge's position. It is very simple to install. No soldering required. Also included in the price is a plastic see through storage case with antistatic lining, which allows you to store 12 ROMs.

**£18**

## Computer Concept's ROMS

Inter BASE	£49
Inter CHART	£25
Inter SHEET	£37
Inter WORD	£36
Mega-3 ROM	£76
Spell Master	£42

## Wordwise plus

£38

**FREE**, the superb Word-Aid ROM worth £24, with every Wordwise Plus.

## Word-Aid

This advance utilities ROM extends the power of your Wordwise plus ROM.

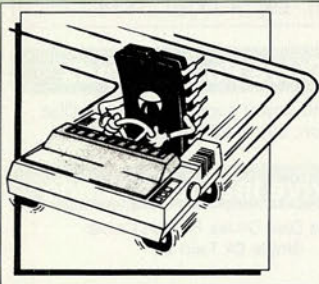
Only £24

(N.B. Word Aid requires a Disc interface in your Micro)

## Acorn ROMS

View 3.0 ROM	£45
Viewsheets (Acornsoft)	£36
Viewstore	£36
Viewspell - 80T disc	£25
View-Index	£12

## View Printer Driver ROM



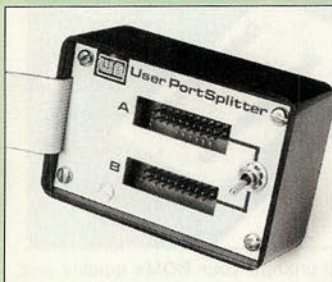
View is a powerful word processor, but it seriously lacks in terms of printer driver support. With the View Printer Driver ROM, the View users will find themselves in the realms of advanced word processing.

Price: Only £29

## Mini Office 2 - Disc

for BBC B & B+ £12  
(When ordering please specify for which Micro & 40 or 80T Disc)

## User Port Splitter Unit



Gone are the days when you had to plug and unplug devices from the User Port. This extremely useful little device allows you to connect two devices simultaneously to the BBC's user port.

Excellent Value at £22

## Assorted ROMS



ACORN ADFS	£25
ACORN BASIC 2 plus User Guide	£22
ACORN DNFS	£17
Acorn OS B+	£25
Acorn OS 1.2	£14
Beebmon	£22
Dump Out 3	£25
Graphics Extension Rom	
GXR-B	£21
GXR-B+	£22
Logotron LOGO	£43
MASTER OS ROM	£38
Master ULA (47)	£15
Master ULA (60)	£10
Numerator - Archi	£69
Numerator - BBC	£39
Pendown ROM	£32
Rom Manager	£20
SERIAL ULA	£13
TED	£35
Video ULA	£14
1Mb OS ROM	£39

**Watford Electronics'**  
**New High Tech Computer**  
**Boutique is now open in**  
**Luton.**

**Don't miss your chance to visit**  
**the Acorn Village.**

## CHIP SHOP

1 MB-10 DIL D-RAM	£4.50
1 MB ZIF D-RAM	£4.00
256K x 4-8 DIP	£4.75
256K x 4-8 ZIF	£4.00

### Memory SIMs

• 256K x 9-7	£9	• 1Mb x 9-7	£29
• 256K x 9-8	£9	• 1Mb x 9-8	£33

### Various Chips

DS3691	£4.50
DS88LS120	£5.25
LM324	£0.45
SN76489	£5.50
SAA5050	£8.75
UPD7002	£6.00
2764-250nS	£3.00
27128A-250n (12V5)	£2.50
27128-250nS (21V)	£4.00
27256-2	£3.00
27512-2	£4.50
27C101G (1 Meg)	£7.00
• 4013	75p
• 68B50	£2.95
• 4020	£1.00
• 7438	50p
• 4164-10	£1.55
• 74LS00	50p
• 4464-10	£3.50
• 74LS04	50p
• 4816 RAM	£2.00
• 74LS10	50p
• 41256-8	£2.00
• 74LS123	£1.00
• 41256-10	£1.50
• 74LS163	£1.00
• 6264LP-8K	£4.00
• 74LS244	£1.00
• 6502A	£5.00
• 74LS245	£1.00
• 65C02 3M	£9.75
• 74ALS245	£2.75
• 65C12	£9.00
• 74LS373	£1.00
• 6512A	£10.00
• 74LS393	£1.00
• 6522	£4.00
• 75453	£1.00
• 6522A	£5.00
• 75159	£3.00
• 62256ALS	£10
• 8271	£32
• 62256P-12	£8.50
• 9637	£2.00
• 6818	£4.00
• 6845SP	£6.00
• ICL7673PA	£3.00

**Acorn Speech Synthesizer**  
**package complete, for the**  
**BBC B Microcomputer**  
**Special Offer £14**

## Commander Joystick



### Features:

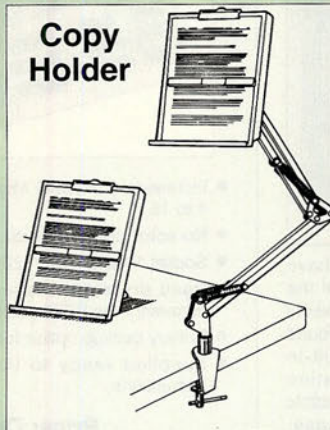
- Direct connection to BBC Analogue input port - interface needed.
- Fully compatible with all BBC Joystick controlled games programmes.
- Switchable springs allow selection of floating or centring operation.
- Trim adjusters for both X and Y axes for fine centre adjustment.
- Convenient stick mounted fire button with additional base buttons.

**Price: £15**

## Voltmace Joysticks

Delta 3B Single Joystick	£10
Delta 3B Twin Joysticks	£15
Delta 14B Single Joystick	£11
Delta-Cat A mouse eliminator	
Joystick for the Archimedes	£24
Analogue aircraft style yoke	
Joystick to run in the analogue port of the BBC B & Master 128	£25

## Copy Holder



Whether you want to type in your latest program or the draft of a new trilogy, Watford's manuscript holders are superb for holding your paper at the ideal height and angle to allow you to read and type in ease and comfort.

Available in 2 full A4 versions, desk resting and shelf clamping. Paper is held firmly by means of a plastic retaining ruler and a clip grip.

**Desk Top £8**

**Angle poise £12**

**NEW**

Copy holders as above but with a battery operated, remote controlled cursor/ruler. (By hand or foot pedal.) (Batteries 2 x AA not included.)

**Desk Top £15**

**Angle poise £20**

## Adder EPROM Programmer

Adder EPROM Programs 2764 and 27128 EPROMs for the BBC and BBC Master. Connects to the User port.

Offer Price: £39

## TEX EPROM ERASERS

Over erasure of EPROMs very rapidly turns them into ROMs!

The TEX erasers operate following the manufacturers specifications to give the maximum possible working life by not erasing too fast.

- **ERASER GT** - Deluxe version erases up to 18 chips. Has automatic safety cut-off to switch off the UV lamp when opened. £36
- Spare UV tubes. £12

## ROM Extraction Tool

This extremely useful tool allows you trouble free chip insertion and removal from your computer by distributing the removal force over the whole body of any 24 or 28 pin chip.

- Plastic Chip Extractor £2
- Metal Chip Extractor £3

## Servisol Foam Cleaner

This king size multipurpose foam cleaner spray is ideal for cleaning Keyboard, Monitor, Disc Drive & Computer furniture surfaces.

£2.50

## Antistatic Aerosol Spray

Ideal for cleaning and preventing static build-up on TV/Monitor Screens.

£2.50

## Aerosol Dust Spray

Ideal for removing dust & dirt from Keyboard & similar inaccessible spaces.

£3

## OFFICE MASTER

- CASHBOOK • FINAL ACCOUNTS
- MAILIST • EASILEDGER -
- INVOICES & STATEMENT

All this for only £21 (Disc)

## OFFICE MATE

- DATABASE • SPREADSHEET
- BEEBLOT

Only £10 (Disc)

## Spares for BBC Micro

UHF Modulator	£4
Speaker £3; Speaker Grill	£1
Keyswitches	£1
16MHz Crystal	£2
17.734 MHz Crystal	£2
32.768MHz Crystal	£2
Replacement 17 way Flexible Keyboard Connector	£4
BBC Master Power Supply	£59
BBC Master Keyboard	£62
BBC Master Casing	£49
<b>Refurbished BBC B Spares</b>	
BBC B Casing	£19
Clear Perspex Keystrip Holder	£3
BBC B Keyboard	£35
BBC B Power Supply	£42

## BOOKS (No VAT on Books)

15 Hr Wordprocessing BBC/View	£6.95
15 Hr Wordprocessing BBC/WW & WW+	£6.95
30 Hour BASIC (BBC Micro)	£12.95
1st Word Plus - Mastering	£13.95
1st Word Plus Rel. 2 Manual	£10.00
A3000 Technical Reference Manual	£29.00
A5000 Technical Reference Manual	£-
Acorn DTP A Guide to	£17.00
<b>Advanced User Guide for BBC</b>	<b>£10.95</b>
Archimedes 1st Step - Beginners Guide	£9.95
Archimedes Assembly Language	£14.95
Archimedes Basic V Guide	£9.95
Archimedes BBC Basic Guide	£20
Archimedes DTP Manual	£10.00
Archimedes Game Maker Manual	£14.95
Archimedes Operating System	£14.95
Archimedes Risc-Os Programmers Reference Manual	£79.00
Assembly Language Quick Ref.	£21.95
BASIC 2 - User Guide	£2
BBC B Micro User Guide	£15
Budget DTP on the Archimedes	£12.95
C Big Red Book of	£8.95
C Programming Lang. 2nd Edition	£24.95
<b>DISC FILING SYSTEM (DFS)</b>	
<b>Operating Manual for BBC</b>	<b>£6.95</b>
DTP on the Archimedes	£12.95
FORTH on the BBC Micro	£9.95
ISO-PASCAL Reference Manual	£9.95
Master 512 Guide - Dabs Press	£9.95
Master Operating System	£12.95
Master Reference Manual - Advanced	£14
Mouse User Guide to BBC Micro - the Complete	£5.95
Example Programs on Disc for above	£4.95
Mysteries of Disc Drives & DFS Revealed	£24.95
PASCAL Programming	£10.95
Risc OS Style Guide	£9.95
RISC Technical Manual 260 pg	£14.95
Understanding Interword - A Beginners Guide	£4.95
View 3.0 User Guide	£10
Viewsheet User Guide	£10
Viewstore User Guide	£10
Z88 - A Dabhand Guide	£14.95
Z88 Computing	£9.95
Z88 Magic	£14.95

## BOOKS for IBM PC & Compatibles

386/486 PC Power User Guide	£19.95
8086/8088 Ass. Language Quick Ref	£8.45
8086/8088 Programming the	£17.95
Accountancy software in Business - Using	£14.95
Agenda - Using	£21.95
Aldus PageMaker - Using	£21.45
AMI Pro 3 - Using Special Ed	£25.95
Amstrad 9512 - Using the	£10.95
Amstrad Basic 2 User Guide	£9.95
Assembly Language 3e - Using	£27.45
Autocad 4th Ed - Mastering	£31.50
AutoCAD - Inside 10 & 11 Spec Ed	£32.45
AutoCAD - Mastering Rel. II 4e	£31.50
Autocad - Mastering Through Rel. 10	£28.95
BASIC - Do it yourself Visual	£18.50
Build Your own 386/386SX & Save	£15.50
Build Your own 80486 IBM Computer	£12.95
C Programming Language 2nd Ed	£26.95
C - Waite Group Turbo C Bible	£27.95
C++ Borland C++ 3 Handbook 2e	£24.95
Clipper 5 Developers Guide	£24.95
Clipper 5.01 3e - Using	£27.45
Computer Users Dictionary	£9.95
Corel Draw 2.1 3e - Inside & Disc	£32.45
Corel Draw 2 3e - Mastering	£26.95
Corel Draw Quick Ref Thro V1.2	£7.95
Corel Draw 2.0 Made Easy	£19.95
Corel Draw v2 Quick Ref	£28.90
Corel Draw Quick Ref v1.2	£8.45
dBase 3/4 Complete Ref	£27.45
dBase III Plus - Complete Reference	£19.95
dBase III Plus Handbook 2nd Edition	£22.95
dBase Instant Reference (III & III+)	£10.95
Desk Jet Unlimited	£19.95
DOS Complete Reference 3e	£23.95
DOS for Dummies Through v5.0	£15.45
DOS - Easy (to ver 5)	£18.45
DOS Instant Ref.	£9.75
DOS Instant Reference (up to 3.3)	£6.95
DR DOS 6 Quick Reference	£8.95
DR DOS 6.0 Stepping up to	£13.95
DTP Looking Good in Print 2e	£21.95
EGA & VGA Cards Prog. Guide to	£27.95
Excel 4 Windows - A Quick Course	£11.95

Excel 4 for Windows Quickstart	£20.45
Excel 4.0 Windows Made Easy 3e	£16.50
Excel 4 for Windows Learn Fast	£16.50
Excel 4 for Windows 2e - Using	£27.45
Fax - Management with	£7.95
FAX - Managing with	£12.95
Foxpro 2 Made Easy Revised Ed	£20.95
Foxpro 2 - Using	£27.45
Foxpro 2 - Mastering 2ed	£26.95
Framework III - Mastering	£24.50
GW Basic Users Guide & Ref	£17.95
Hard Disc Instant Ref	£10.95
Hard Disc management - Quick	
Reference Guide to	£4.95
Hard Disc - Using Your	£27.45
IBM PC & PS/2 - Inside the 3rd Ed	£21.70
IBM PCs 386 486 Power User Guide	£17.95
LAN-Understanding Local Area Networks	£23.50
Locoscript PC v1.5 - Using	£14.95
Lotus 1-2-3 for Windows	£27.45
Lotus 1-2-3 Rel. 2.4 Special Ed - Using	£27.45
Microsoft GW BASIC	£17.95
MS-DOS 5 - 10 Minute Guide to	£9.95
MS-DOS Batch Files Quick Ref	£5.95
MS-DOS First Book	£15.50
MS DOS for Beginners	£17.45
MS-DOS Quick Ref Guide 5	£8.95
MS-DOS - Running 4th edition	£19.95
MS-DOS - Supercharging 2nd Edition	£17.95
MS-DOS Users Guide 3rd Edition	£27.95
MS-DOS 5 - Quick Start	£18.45
MS-DOS 5 User Hand Book	£19.95
MS-GW BASIC User Guide & Ref	£17.95
MS Visual BASIC Workshop incl. Disc	£28.30
Netware Understand Local Area	£24.50
Netware Users Guide 2.2 & 3.11	£22.95
Novell Netware 386 Comp Ref	£29.95
Novell Netware 2e - Using	£27.45
Novell Network - Mastering	£27.95
Novell Network - Using	£27.45
Pagemaker 4 IBM - Use incl. Disc	£19.95
Pagemaker 4 for Windows - Using	£27.45
PageMaker on IBM PC - Using	£22.95
Pagemaker - Using	£22.95
Paradox 4 Quick Reference	£8.95
PCs & Compatible Computers for	
Beginners	£17.95
PC Crash Course 2.0 2nd Edition	£19.95
PC Configuration Handbook 2e	£26.99
PC - Fix your own	£22.50
PC - Upgrade & Maintain - Complete	£25.50
PCs - Upgrading & Repairing 2e	£32.45
Programming Guide to EGA & VGA Cards	£25.95
Quattro Pro 4.0 Made Easy	£16.50
Quattro Pro 4 Special Ed - Using	£25.95
Smart - Using	£21.45
Smartware II - Mastering	£22.95
Smartware II - Using	£27.45
Supercalc 5 - Mastering	£24.50
Supercalc 5 2ed - Using	£27.45
Timeworks Publ. 2 - Practical Guide	£16.95
Timeworks Publisher Comp. v2.0	£12.95
Turbo C Bible	£27.95
Turbo C++	£22.95
Turbo Pascal 5 - Using	£22.95
Turbo Pascal Using	£27.45
Unix - Using	£27.45
Upgrading & Repairing PC's	£27.45
Ventura Publisher - Using	£22.95
Ventura Tips & Tricks 3e	£21.95
Ventura - 3rd Edition	£24.95
Windows 3.1 10 Minutes Guide to	£9.95
Windows 3.1 Program Ref Vol 4	£19.95
Windows 3.1 A Quick Course in	£11.95
Windows 3.1 Mastering 2e	£25.50
Windows 3.0 3.1 Using Special Ed	£25.95
Windows 3.1 Complete Ref 2e	£23.95
Windows 3.1 Program Ref Vol 1	£26.95
Windows 3.1 Program Ref Vol 2	£35.95
Windows 3.1 Prog Ref Vol 3	£26.95
Windows 3.1 Quick Reference	£8.95
Windows 3.1 Secrets 2e + Disc	£36.95
Window Programming 2nd Ed	£27.95
Word 2 for Windows Made Easy	£16.95
Word for Windows made easy	£15.95
Wordperfect - Quick Reference V5	£8.95
Wordperfect 5.1 - ABC's of	£18.95
Wordperfect 5.1 - 1st Book of	£15.95
Wordperfect 5.1 - Mastering	£24.95
Wordperfect 5.1 Quick Course	£11.95
Wordperfect 5.1 Quick Start	£20.45
Wordperfect 5.1 - Using Special Ed	£25.95
Wordperfect for Beginners	£17.45
Wordstar & CPM Made Easy	£15.75
Wordstar 6.0 Made Easy	£15.95

### WORD FOR WINDOW

10 Minute Guide Word 2 Windows	£9.50
DTP with Word 2 for Window	£20.45
MS WORD 2 Windows Made Easy	£16.95
Master MS WORD 2 for Windows 2e	£24.50
Quick Course Word 2 Windows	£10.95
Running WORD 2 for Windows	£29.95
Using WORD 2 for Windows 2e	£25.95

Carriage on Books vary between £3 to £4.00, depending on their weight

## ACORN to PC

### Stop the Confusion!

Do you have to use both Acorn computers and PC's? Would you like to use your Archimedes or A3000 in PC-emulation mode but are unsure of the new commands?

Although Acorn machines (such as the BBC B, the Master, the Archimedes) are mainly used in education, most commercial computers use other operating systems, particularly MS-DOS. As a result school computer users are at a disadvantage when moving into 'business' computing. PCs and other commercial computers use MS-DOS as the operating system, so commands for formatting, copying, backing up, printing and the modem are not the same. Even file names are written differently! And did you know that there is one Acorn command which, if used in MS-DOS, wipes everything in the current directory?

'ACORN TO PC' enables you to change over painlessly. It shows clearly and quickly how, why and where the two systems (Acorn and MS-DOS) differ. As with a foreign language dictionary, you can use the book to transfer either way - from Acorn to MS-DOS, or from MS-DOS to Acorn.

**Price: £8.95 (No VAT)**

## The Complete BBC Computer User Handbook

If you own a BBC B, B+, Electron, Master 128 or Master Compact, or Archimedes, then this is the book for you. It shows how to get the best from your machine, and how to make it work for you.

**Only: £9.95 (No VAT)**

## Beeb PC (BASIC)

Designed for program authors to convert BBC programs to run on IBM PCs.

**Price: £38**

## Beeb DOS 3.0

(Now reads Archimedes Discs)

Beeb DOS is a collection of utilities which run on the PCs and enable it to read and write information on BBC Discs.

**Price: £39**

**£4.95 (No VAT)**

## The Complete Mouse User Guide to BBC Micro

This manual has been written to reveal the secrets of the mouse. It explains all the principles required by the hardware and associated software, and also example listings for inclusion into custom programs. The manual first details the basic principles of the mouse and a simple program which uses these principles. This information should be adequate for most applications. However, it is possible to improve the performance of the mouse by expanding on the principles already used in the software. This is again fully explained and an example program given.

It is possible to gain a full understanding of the mouse from this manual. For those not interested in exactly how the mouse functions, complete example programs are also included.

**Price £5.95 (No VAT)**

**Example programs on Disc £4.95**

## The Epson RX/FX Printer Commands Revealed Handbook

So you bought yourself a new printer, because the salesman in the shop showed you how clever it is and impressed you with all sorts of printouts to show its capabilities - he may even have offered you a special price.

However, now that you have got it home and connected it to your BBC microcomputer, you are wondering how to make it perform these magical tasks. The manual seems to give no clues, and when you type in the example programs, the computer throws the LPRINT statements back in your face.

Now what do you do, when this £400 piece of high technology refuses even to move its head, and you have stayed up until 2 in the morning with copious supplies of coffee, desperately trying to print something out? Once again, Watford Electronics comes to your help with our new book entitled 'THE EPSON FX-KAGA PRINTER COMMANDS REVEALED'.

This book describes in plain, easy to understand English, how to use and make the most of your KP810, PW1080A or any other Epson FX80 compatible printers like Panasonic KX-P1080/1, etc., with the BBC Micro, both from Basic and Wordwise.

# Watford Electronics Ltd

### Mail Order & Showroom:

**Jessa House, Finway, off Dallow Road, Luton, LU1 1TR, England**

**Tel: 0582 48 77 77 Tlx: 8956095 WATFRD Fax: 0582 488588**

### Showroom Only:

**Jessa House, 250 Lower High Street, Watford, WD1 2AN, England**

**Tel: 0923 237774 Fax: 0923 233642**

Offers and all items are subject to availability. Prices may have to change for reasons beyond our control. Mail Order and RETAIL SHOP. Trade and Export inquiries welcome. Government and Educational Establishments' OFFICIAL ORDERS Accepted. Shop Hours: 9.00am to 6.00pm, Monday to Saturday. Thursdays 9am to 8pm. (Free Customer's Car Park). VAT: UK customers please add 17.5% VAT to cost incl. Carriage. CARRIAGE: Unless stated otherwise, minimum £3 on all orders. £4 on Larger items. On bulkier items, £7 Courier charge applies (UK mainland only). Overseas orders, carriage is charged at cost. Specifications of all products are given in good faith but are subject to change without notice. Some items vary in their availability. Watford Electronics Terms and Conditions are available upon request. Please ring for latest delivery situation.

# Instructional Videos at amazing savings

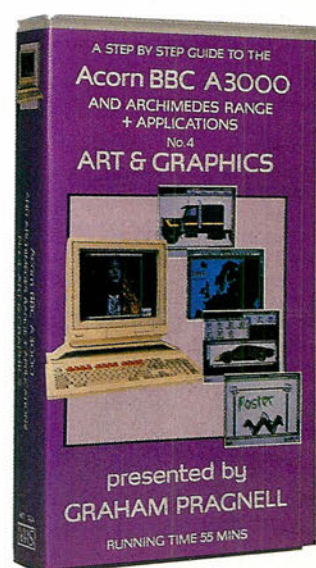
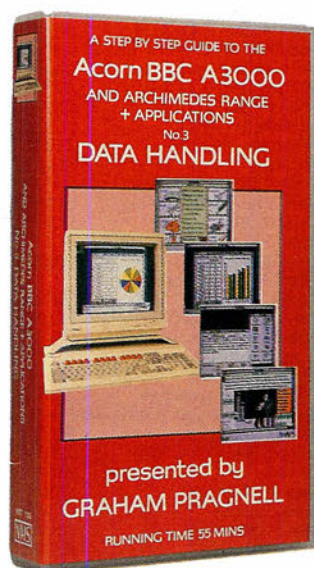
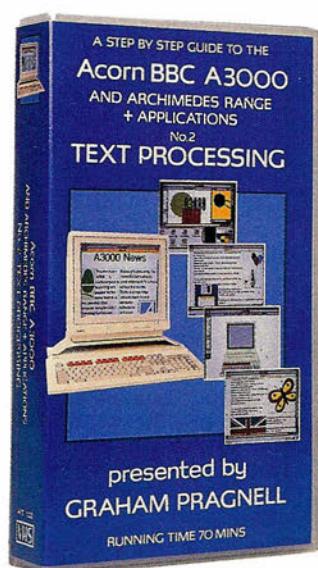
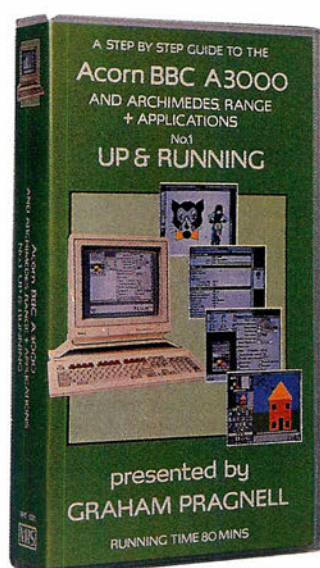
For the  
BBC A3000 /  
Acorn Archimedes

Normal price £14.99 available exclusively to readers of

Save  
£5 per video

**BBC**  
**ACORNUSER**

at only **£9.99** each including delivery



## 1. Up & Running

An introduction to your easy to use, powerful multitasking BBC A3000 / Acorn Archimedes.

*This video features:*

- How to load and run software
- How to save to disc
- How to print
- How to edit text through *Edit*
- How to handle graphics through *Paint* and *Draw*

## 2. Text Processing

Word processing offers easy text manipulation for highly polished results, while Desktop Publishing offers a variety of page formats and the use of diagrams and pictures

*This video features:*

- *First Word Plus*
- *Phase#2*
- *Ovation Professional DTP*
- *Technoscan II*

## 3. Data Handling

Your BBC A3000 / Acorn Archimedes offers powerful data processing coupled with professional graphic display

*This video features:*

- *Data Sweet*
- *Squirrel*
- *Schema*
- *Genesis*
- *Magpie*

## 4. Art & Graphics

Speed and ease of use makes the multitasking BBC A3000 / Acorn Archimedes computer superb for art and graphics. Effects can be created and undone at the touch of a button. Make full use of the 256 - colour palette that the machines put at your fingertips.

*This video features:*

- *Paint*
- *Revelation*
- *Poster*
- *Technoscan II*

## Order Form

**FREE DELIVERY**

	PRICE	QTY	TOTAL
1. UP AND RUNNING	£9.99		
2. TEXT PROCESSING	£9.99		
3. DATA HANDLING	£9.99		
4. ART & GRAPHICS	£9.99		
TOTAL VALUE			

AU/2/93

**ORDER HOTLINE - CALL 0937 842489**

Please debit my Access/Visa Card No.

To the value of £

Signature

Expiry Date

Name on card

or I enclose a cheque/postal order for £

Made payable to: Redwood Publishing Ltd.

PO Box 66, Wetherby, West Yorkshire, LS23 7HL

Name.....

Address.....

Postcode.....

Tel: .....

Please allow 10 days for delivery

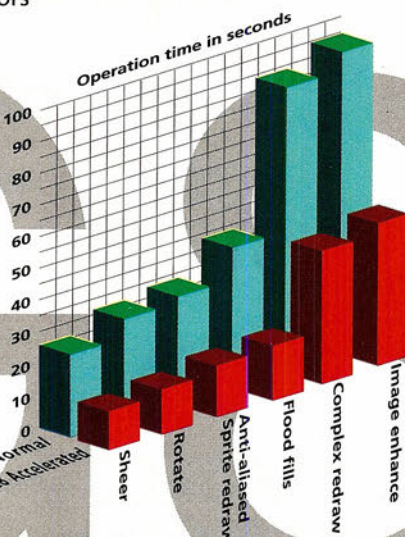
# Eureka!

## Now Available

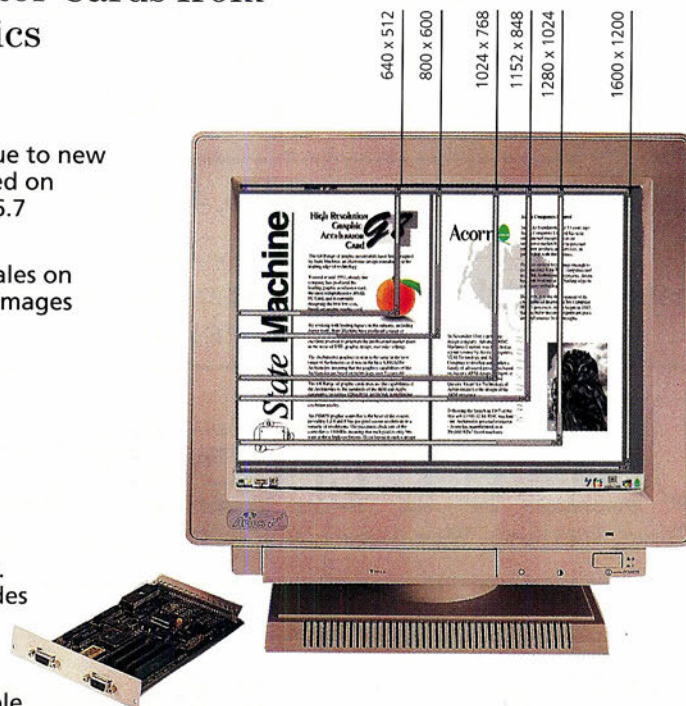
High Quality, High Resolution Colour Graphics for the Acorn Archimedes made possible with the G8 Range of Graphic Accelerator Cards from Watford Electronics

- ◆ Produces high resolution images on screen
- ◆ More colours available due to new palett. Up to 256 displayed on screen from a palett of 16.7 million colours
- ◆ 256 simultaneous grey scales on screen for photorealistic images
- ◆ Increases the refresh rate of the screen to reduce visible flicker
- ◆ Faster graphics re-draw operations
- ◆ Increases the speed of all machine operations
- ◆ Direct Drive video output. Sharper images in all modes
- ◆ Sound output is unaffected
- ◆ Fully tested and compatible with the following monitors  
Eizo, Taxan  
Radius, NEC  
MicroVitec  
Aries  
Acorn Multisync  
Panasonic  
Phillips  
DEC VR110/VR260
- ◆ Compatible with all Archimedes except A3010, A3020, A4000 & A4

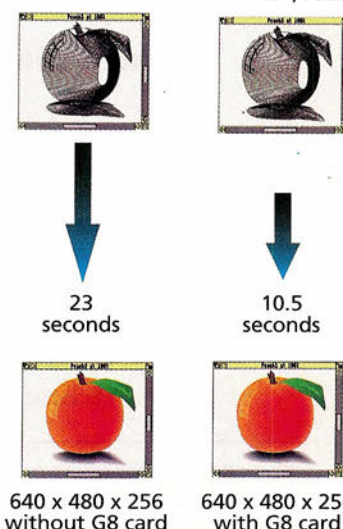
A comparison of speed performance between a standard A440/1 and one fitted with a G8 Accelerator Card from State machine.



**£239\***  
Special Introductory Offer



Performance test on A440/1, ARM2



### Specification

Maximum Resolution	1280 x 1024 @ 4 colours
	(Square Pixels)
(Rectangular Pixels)	1152 x 848 @ 16 colours
	800 x 600 @ 256 colours
V. Scan Frequency	1600 x 1200 @ 16 colours
	1152 x 848 @ 256 colours

V. Scan Frequency	*56-110Hz (NI), 87Hz (I)
H. Scan Frequency	*31.5-75KHz

Video Memory	512KB
Output Video Signal	Analogue RGB (RS-343A) Composite grey level 15 and 9 pin connectors
Sync	H. Sync (TTL Level) V. Sync (TTL Level) Composite (TTL Level) Sync on Green
Palette	24 bit (16.7 million colours)

\*Mode dependent, (NI) = Non Interlaced, (I) = Interlaced



**Watford Electronics**  
Established 1972

Head Office & Showroom:  
Jessa House, Finway, Dallow  
Road, Luton, LU1 1TR.  
Tel: (0582) 487777  
Fax: (0582) 488588  
Telex: 8956095

Branch Office & Showroom:  
Jessa House, 250 High Street,  
Watford, WD1 2AN.  
Tel: (0923) 237774  
Fax: (0923) 233642

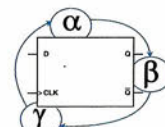
**Order Hotline 0582 487777**

(9am-6pm Monday-Saturday). FAXLINE 0582 488588.

24-Hour Answerphone Line 0923 233383

VAT: UK customers, please add 17.5% to value of order and carriage.

Offers and all items are subject to availability. Prices may have to change for reasons beyond our control. Specifications of all products are correct at time of going to press and given in good faith, but may change without notice. All trademarks acknowledged. Goods are sold subject to our standard Terms & Conditions of Sale available on request. E&OE. Phone for the very latest prices and the quickest delivery options.



**State Machine**

75 Upper Wellington Street,  
Luton, LU1 5AA. (0582 483377)

\* Add VAT and £5 for carriage

## MEMORY upgrades for the A3010, A3020 & A4000

A3010 1-2MB	£ 35 inc VAT
A3010 1-2MB expandable to 4MB	£ 55 inc VAT
A3010 4MB	£ 150 inc VAT
A3020 & A4000 2-4MB	£ 70 inc VAT

User fittable but dealer fitting recommended, Please ring for further details.

The CJE ARM3 upgrade has the greatest upgrade ability, service ability and has proven to be very reliable.

### ARM3 Upgrades

Please Ring for LOW LOW PRICE

Special Pricing also on Ram Upgrades for the 310, 410, 420, A3000, 540 & A5000.

Phone for our deals on complete systems pricing.

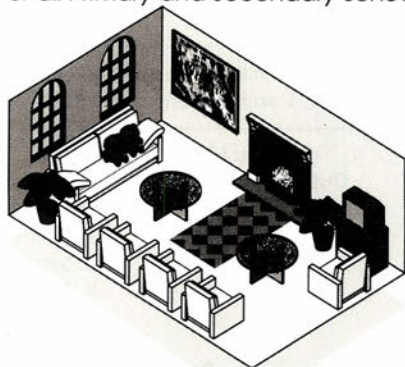
Delivery charges from £1.00

# CJE micro's

78 Brighton Road, Worthing, West Sussex. BN11 2EN. Telephone 0903 213361

# SPEX

3D Environment Design Software  
For all Primary and Secondary Schools



- 2D planning, 3D view
- Easy menu system
- Drag & Drop editing
- Library search
- 'Drawfile' exporting
- Pictogram and Bar Charts
- Cut out and make a plan model
- Four home environments - Kitchen, Bathroom, Bedroom and Lounge.
- Over 50, quality, drawfile objects
- Adding extra items discs will allow SPEX to create Gardens, Theatres, Classrooms .....

Great fun and simple to use!

Explan software for the Acorn Archimedes

Explan UK Limited, FREEPOST, Tavistock, PL19 9BR. Tel/Fax 0822 613868

## Liquid Silicon

Full Catalogues Now Available  
Call for your copy

A3010 1-4Mb  
£124 inc.

A5000 2-4Mb  
£90 inc.

Example Prices :

- A3010 Joymaster (£28)
- Aldebaran (£29)
- Battle Chess (£Call)
- Black Angel (£29)
- Champions (£26)
- Dungeon (£30)
- Fervour (£22)
- The Games Wizard (£30)
- Guile (£26)
- Hero Quest (£26)
- Ixion (£22)
- Oh No! More Lemmings (£17)
- Paradroid 2000 (£22)
- Repton 4 (£22)
- Sim City (£30)
- Technodream (£Call)
- ArtWorks (£160)
- CADet (£159)
- Eureka (£117)
- Impression II (£150)
- Prophet (£160)
- Prophet Demo (£11)

FREEPOST EH2725

Kirkcaldy

Fife

KY2 5BR

Tel: (0592) 260512

Run by enthusiasts for you.

ALL PRICES INCLUDE VAT AND POSTAGE.

Acorn Authorised Dealer

# SURVIVING THE RISCS

Mark Moxon offers advice for the perplexed Risc OS 3 user

When we asked you in February to let us know if you had any difficulties with the upgrade to Risc OS 3, we hardly thought the response would be so great. Here are some of the more common problems you've had...

● 'I thought that I would be able to drag a number of *Draw* files to the printer queue to achieve background printing, but the hourglass appears when I drag the first one and it remains until the file is printed. It therefore seems to be impossible to achieve a printer queue and background printing.'

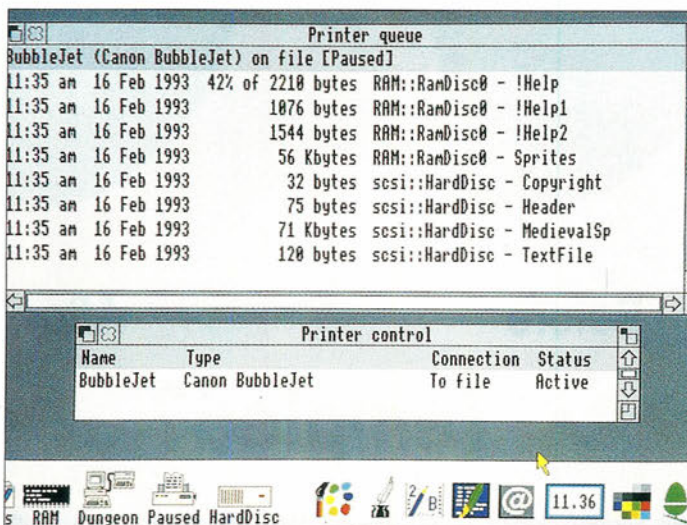
Neither Risc OS 2 nor Risc OS 3 support background printing for all files: it depends on the type of file you are trying to print.

For example, when a *Draw* file is printed, either by choosing the print option from *Draw* or by dragging a *Draw* file to the printer manager, *Draw* hogs the machine while it prints.

There is nothing the printer manager can do about this, and indeed most applications print this way (for example: *Impression*, *Ovation* and *Paint*). However, there are two occasions when queueing comes into play...

The first is when a selection of files is dragged to the printer manager. These are queued and, although the machine will be taken over while printing takes place, all the files will be printed in turn, which wasn't possible on Risc OS 2.

The second is when the file can be printed in the background. The most common file which can be printed this way is the text file. If you bring up the printer queue window and drop a text file onto the printer manager,



Printer queueing is possible with Risc OS; it just doesn't always multitask

## RISC OS 3.1 BUGS

● The Auto boot option in the desktop boot file save box does not have any effect. To save your boot file so it is automatically run when the machine is turned on, you must do the following. If you have saved the boot file onto an ADFS disc, then press F12 and type:  
 \*Configure FileSystem ADFS  
 \*ADFS  
 \*Mount 4  
 \*Opt 4 2  
 \*Configure Boot  
 If you have saved the file onto a SCSI disc, then press F12 and type:  
 \*Configure FileSystem SCSI  
 \*SCSI  
 \*Mount 4  
 \*Opt 4 2  
 \*Configure Boot  
 In each case, press RETURN twice at the end, and then press CTRL-RESET. Each time you turn on the

machine, your boot file will be run. Note that in the above, the \*Mount 4 command should be changed to refer to the drive containing the boot file, so if you are putting the boot file on a floppy disc, you should type \*Mount 0.

● DOS discs must be dismounted after use, otherwise files may be corrupted.

● ADFSBuffers should be set to 0 on the A3010, A3020, A4000, A5000 and A4. If ADFSBuffers is set to a higher value, then there is a small chance of floppy disc corruption. To set this to zero, press F12 and type:  
 \*Configure ADFSBuffers 0  
 followed by RETURN twice. Then shutdown and switch off the computer, and turn it back on after at least five seconds.

you will see the percentage figure change as the file is printed.

While this is happening, you can drag any other file to the manager to join the queue (even *Draw* files). The computer only 'hangs up' when it comes to print a file for an application which does not support multitasking printing.

● 'Help! I have an A5000 hooked up to a Hewlett Packard DeskJet 500C colour printer, and since the upgrade to Risc OS 3.10 I am unable to print anything.

I have contacted Acorn, who told me that the new upgrade does not support the printer driver required for my printer and that my old one - from Risc Developments - was of

no use. They told me I should purchase the Ace Computing printer driver, which would make the total cost of my upgrade £60.'

You certainly don't need to shell out any more money for a 3.1 version of the printer driver. If you send your printer driver disc back to Risc Developments, the company will upgrade it for free.

This does illustrate a valid point: Risc OS 3 contains a large number of changes from Risc OS 2, and as a result not all software will work correctly on the new system, especially when it comes to printing. If you have problems with particular software, contact the producer, and the chances are they will be aware of the problem.

● 'Risc OS 3 has the effect of slowing things up. I hadn't realised this would happen. Screen refresh rates are now sluggish and fonts take longer to draw when using *Impression*. I had to spend another £170 or so to upgrade to an Arm3 to make Risc OS 3 usable.'

There is no doubt that Risc OS 3 is a little slower than its predecessor, and to some this can be most frustrating. Although £170 is a lot of money, the Arm3 really does transform the machine, and it's one of those upgrades that you can't live without once you've taken the plunge.

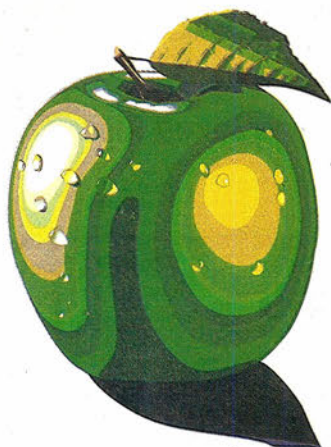
Risc OS 3 on the Arm250 (as in the A3010, A3020 and A4000) is perfectly acceptable, but on the older Arm2 machines with slow memory, the upgrade can be sluggish. You pay your money and you take your choice.

● Any other problems? Drop us a line...

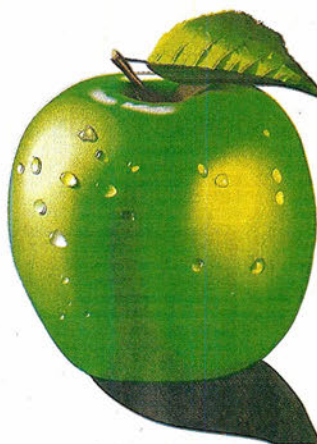
# What can an Ace ProDriver do for me?

Standard Deskjet 500C Driver

Deskjet 500C ProDriver



Before



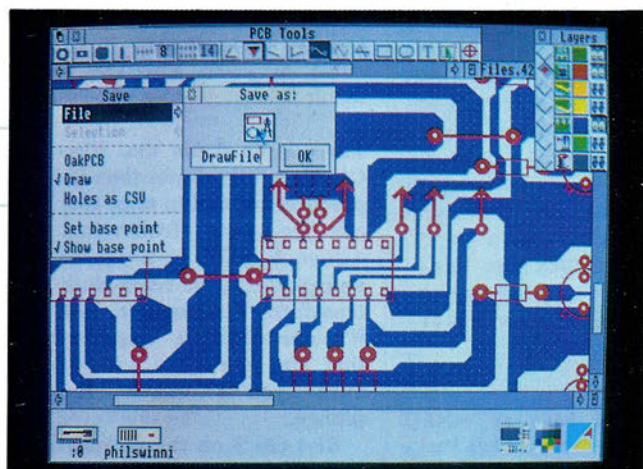
After

## Tempted?

24 bit colour, colour separations, spooling, background printing and quality that speaks for itself, with upgrades starting from only £25.  
Whatever your printer, contact Ace – leaders in printing technology on the Archimedes.

Oak Solutions Ltd.  
Suite 25  
Robin Enterprise Centre  
Leeds Road  
Idle  
West Riding of Yorkshire  
BD10 9TE  
Tel: 0274 620423  
Fax: 0274 620419

# PCB & Schematic Design



**Desktop user interface based on !Draw**  
**PCB and Schematic libraries supplied**  
**Tracks attach 'intelligently' to pads**  
**No practical limit to board size**  
**Supports up to 4 layer boards**  
**Solder mask and drilling layers**  
**Drawfile import and export**  
**Uses outline fonts**  
**Printer output via RISC OS drivers**  
**HPGL Plotter driver supplied**



Oak Solutions Ltd Suite 25 Robin Enterprise Centre  
Leeds Road Idle West Riding of Yorkshire BD10 9TE  
Tel: 0274 620423 Fax: 0274 620419

**Only £99.95**

Education Price £69.95

Prices exclude P&P at £1.50 and VAT

## Get on the right track with Oak PCB

# Prophet

If you are still writing your accounts manually or are fed up with complicated double entry systems (and the jargon that goes with them) then **Prophet** is for you. At its simplest level, all you need do is type your income and payments directly into fully editable windows in **any order** - sorting by date is automatic. **All** mistakes can be edited **at any time** and you don't lose your previous months data (unlike most other accounting packages). This means you can analyse your entries and produce reports whenever you want to and for any period. **Prophet** is not only user friendly, it is also completely forgiving. This is why it is used by so many book-keepers. It is not though, simply a cash book. It covers stock control, purchase orders, invoicing, statements, multiple bank accounts, **automatic** standing orders, VAT, mail-merging and label printing with some of the best features ever seen. It can also calculate your profit/loss, balance sheet and tax liability and let you deal direct with the Inland Revenue (perfect for sole traders and partnerships who wish to reduce or cut out completely the cost of an accountant). It is also the only program to have had good reviews in all the magazines and the only program which offers **free telephone help and upgrades** - our service is simply the best. **Prophet** costs £170 + VAT and is available directly from us in the UK, or Winsley & Hall in New Zealand (tel:09 630 9691). Australian, Dutch and Canadian versions are also available. Overseas price: £180 inc. (no VAT). Please ask for our free brochure. Demo disk available **with save option** for £10 inc. (refundable on full purchase). **Prophet** has been chosen by **Acorn NZ** to compliment the A4000 Home Office System.

The screenshot displays the Prophet software interface with multiple windows. The 'Purchase Ledger' window is prominent, showing a table with columns for Date, TaxPct, Supplier, Cd:Account, Ref, Total, Cds, VMT, Paid, Cd:Heading, and Comments. It lists transactions for 12.02.1993 and 14.02.1993. Other windows visible include 'Bank/Cash/Credit/Deposit Accounts & Balances', 'Opening Account Name', and 'Purchase/Payment Analysis Headings'.

Archive Magazine May 1992 - *if Acorn were to market a business package, Prophet would be the essential part.*  
 Risc User July 1992 - *Invoicing is a joy to use...anyone requiring an accounts package would do well to look at Prophet..it fulfils all my needs.*  
 Archimedes World September 1992 - *what makes it the best is its ease of use...comprehensive, fast, brilliant!*  
 Acorn User October 1992 - *I liked Prophet, it was robust and I thought the user interface was well set out making the program easy to use.*  
 Acorn Computing Oct. 1992 - *the manual proved to be the first in many years that I have read from cover to cover...give Prophet full marks.*

## Apricote Studios

2 Purls Bridge Farm, Manea, Cambs, PE15 0ND

Tel: 035 478 432

Come and see Prophet at the  
 Acorn User Show in Harrogate  
 15/17th April 1993 - Stand 69



### DISK STORAGE BOXES

3 1/2" 10 CAPACITY QTY 5 .....	£4.50
3 1/2" 50 CAPACITY LOCKABLE .....	£3.70
3 1/2" 100 CAPACITY LOCKABLE .....	£4.70
5 1/4" 10 CAPACITY QTY 5 .....	£4.99
5 1/4" 50 CAPACITY LOCKABLE .....	£3.70
5 1/4" 100 CAPACITY LOCKABLE .....	£4.70
200 LOCKABLE DRAWER TYPE .....	£18.00

### ACCESSORIES

IBM PRINTER CABLE 1.8 MTR.....	£4.90
(ALSO FOR ATARI AND AMIGA)	
25 PIN M-M AND M-F 1.8 MTR.....	£4.90
36 PIN CENTRONIC M-M 1.8 MTR.....	£4.90

PRICES ONLY IF BOUGHT WITH DISKS

## 3 1/2" DISKS

TYPE	QTY	25	50	100
BENCHMARK DS/DD		£18.60	£32.20	£47.35
UNBRANDED DS/DD		£13.40	£22.20	£41.35
BENCHMARK DS/HD		£34.80	£63.35	£71.70
UNBRANDED DS/HD		£26.20	£38.35	£63.70

## 5 1/4" DISKS

TYPE	QTY	25	50	100
BENCHMARK DS/DD		£11.00	£18.00	£28.00
UNBRANDED DS/DD		£9.50	£16.00	£24.00
BENCHMARK DS/HD		£18.00	£31.50	£52.50
UNBRANDED DS/HD		£14.00	£27.00	£48.00

ALL DISKS 100% CERTIFIED ERROR FREE.  
 3 1/2" INC. LABELS. 5 1/4" INC. ENVELOPE AND LABEL SET.

**Northern  
 COMPUTER  
 Markets**

**50P OFF**  
 ADULT ADMISSION WITH THIS VOUCHER

1993 DATES  
 1ST MAY - MANCHESTER (BOWLERS EXHIBITION CENTRE)  
 2ND MAY - PRESTON (NOVOTEL HOTEL)  
 15TH MAY - LIVERPOOL (EVERTON PARK SPORTS CENTRE)  
 16TH MAY - DERBY (PERIQUITO HOTEL)  
 13TH MAR - MIDDLESBORO (ST MARYS CENTRE)  
 14TH MAR - WOLVERHAMPTON (NOVOTEL HOTEL)  
 3RD APR - MANCHESTER (BOWLERS EXHIBITION CENTRE)  
 4TH APR - COVENTRY (NOVOTEL HOTEL)  
 17TH APR - SHEFFIELD (NOVOTEL HOTEL)  
 18TH APR - OLDHAM (PERIQUITO HOTEL)

ALL SHOWS 10AM TO 3PM  
 NORMAL ADULT ADMISSION £1.50  
 WITH THIS VOUCHER £1.00

COME & VISIT THE  
 BEST SHOWS WITH  
 THE LOWEST PRICES

STALL SALES  
**061-681 0569**

**M  
 C  
 S**

ALL PRICES INCLUDE VAT & P&P. UK ORDERS ONLY

Cheques and  
 Postal Orders to:

MANOR COURT  
 VISA

24 HOUR  
 ORDERLINE  
 0597 851 784

**Manor Court Supplies Ltd**

Telephone: 0597 851 792 Fax No: 0597 851 416

Dept AU2, Glen Celyn House, Penybont,  
 Llandrindod Wells, Powys, LD1 5SY

EDUCATION AND GOVERNMENT ORDERS WELCOME

# Design Processor

## Revolutionary

The most comprehensive and forward thinking Design & Technology application

## Easy to learn

RISC OS compliant with consistency throughout all areas of Design and Technology activity

## Versatile

Talks to a wide range of output devices including printers, plotters, CAMM cutters and engravers, CNC machines

## Comprehensive

The large array of applications included can be used across virtually all areas of Design & Technology

## Growing

New areas of activity constantly under development, with free updates for three years

## Relevant

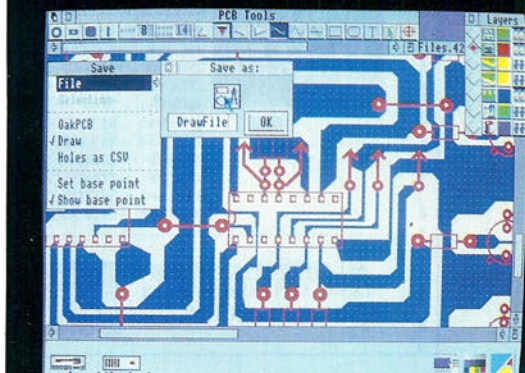
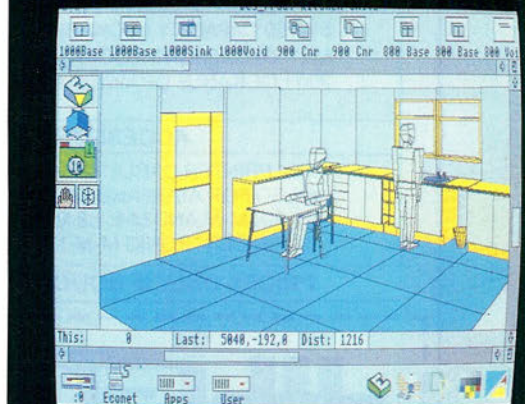
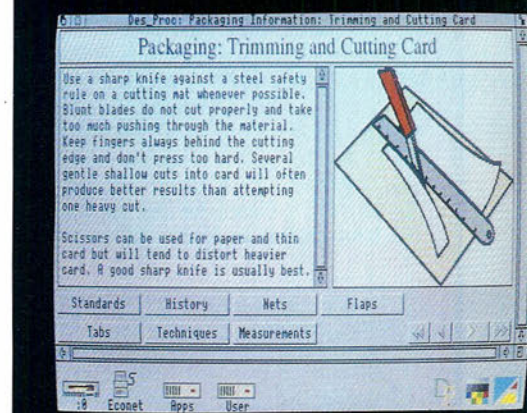
Designed by advisors and teachers, and targeted for use at Key Stage 3 and above

A site licence for Design Processor costs £900 (payable over three years). This represents a significant saving compared to purchasing the included CAD systems separately. Design Processor runs on Acorn Archimedes computers. Telephone to arrange demonstrations to IT centres and groups of schools.

## The Next Generation of Software for Design & Technology



Oak Solutions Ltd. Suite 25 Robin Enterprise Centre Leeds Road Idle  
West Riding of Yorkshire BD10 9TE Tel: 0274 620423 Fax: 0274 620419

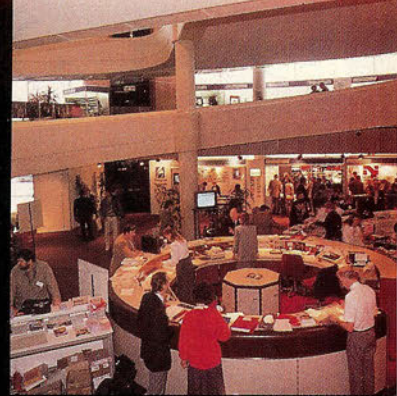


**BBC**  
**ACORNUSER**  
**SPRING SHOW '93**

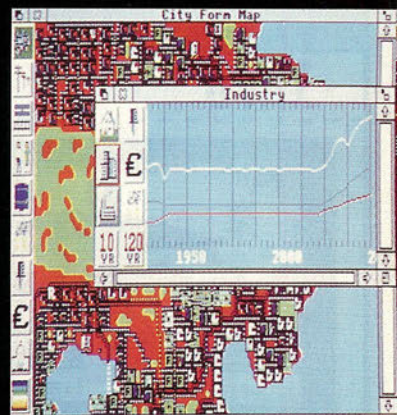
**SPECIAL SUPPLEMENT**

**HARROGATE  
INTERNATIONAL CENTRE**

**APRIL 15 – 17 1993**



**NEW VENUE**



**GAMES**



**EDUCATION**



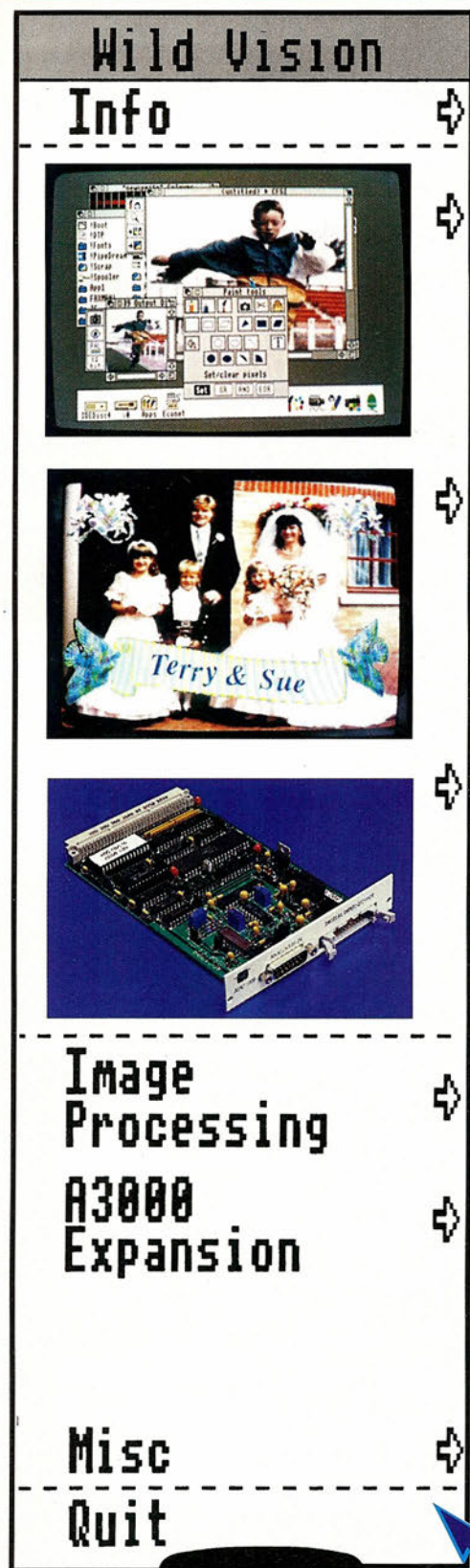
**PERSONALITIES**



**HARDWARE**

# DESKTOP VIDEO

## ON THE MENU TODAY...



High quality expansions for the Archimedes, A5000 and A3000 from the specialists in Desk Top Video.

### Real Time Colour Video Digitisers

Use video or TV as a source for computer images. The popular Hawk V9 digitiser is the ideal solution wherever you need photograph-like sprites in colour or monochrome for DTP or Art applications. Wild Vision combine quality and performance with value; real-time colour digitisers available from £199.00.

### Superimposing text, graphics or animation onto video

Simple, with a *genlock and overlay card*. The Chroma range is your route to creating and recording video masterpieces. Just let the film - and your imagination - roll! Chroma Genlock range from £215.00.

PAL encoding units with optional multiple display facility also available.

### Data acquisition

The Archimedes is the ideal vehicle for the measurement and analysis of analogue signals such as sound or ECG readings. Wild Vision's high speed 12-bit analogue to digital converters are used in medicine, research, defence, and incorporated into turnkey systems. ADC1208 from £560.00.

### Image Processing and Analysis

The Hawk V12 video framestores are designed specifically for image processing on the mighty Archimedes. With Foster Findlay's Arclmage software, a powerful image processing and analysis system is created. Hawk V12 from £1,990.00.

### Expanded capacity for your A3000

Wild Vision's sturdy Expansion Box allows you to use standard Archimedes expansion cards with your A3000; up to three cards may be fitted at once. A3000 Expansion Box £139.00.

Contact Wild Vision for full details and price information on the above hardware and recommended complementary software.

Wild Vision, 15 Witney Way, Boldon Business Park, Boldon Colliery, Tyne & Wear NE35 9PE, Tel: 091 519 1455, Fax: 091 519 1929

Prices exclude carriage and VAT

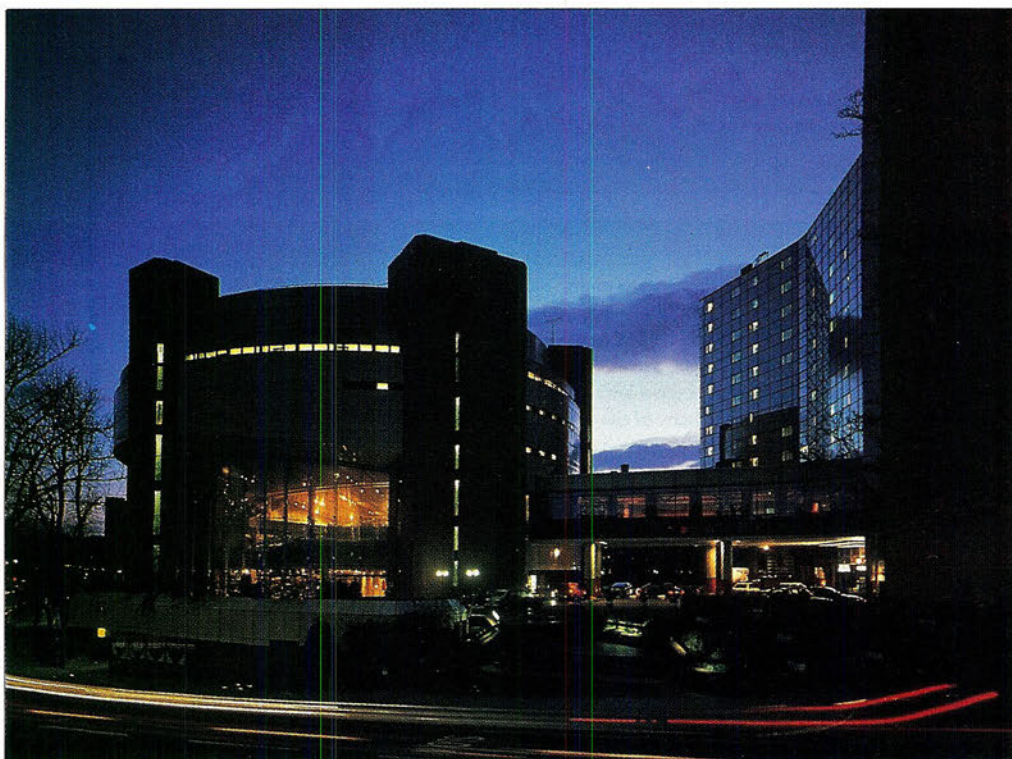
# WILD VISION

# THE BBC ACORN USER SPRING SHOW

Spring is in the air, and it's time for another show; get the details here

The BBC Acorn User show is often cited as the most important date in the Acorn calendar. As a forum for exhibitors and visitors alike, it has established a well-earned reputation as a launch pad for new releases, a venue where visitors can try out existing software and a haven for the bargain hunter. This year promises to be no exception to the rule.

The Spring Show, opening on 15 April, marks the main Acorn event outside London, and should give many readers the chance to attend for the first time. Based in Harrogate, the show is within easy reach of northern towns such as York, Leeds and Manchester, and the town itself is an attractive venue for any weekend visitor. But, of course, what most visitors will want to see are the products themselves . .



Harrogate: the first northern venue for the Acorn User show

## THE EXHIBITORS

With over 50 exhibitors, catering for education, business and home use, there is certainly plenty to see. The Acorn stand will be the first stop for many visitors, and Acorn will be showing off their latest range of hardware and software.

Major attractions will include the new integrated software package, *Advance*, of particular interest to budget-conscious schools. All visitors should check out the Replay DIY kit, which allows the user to transfer moving video footage to their machine. Other points of interest include the multimedia expansion kit

and Acorn's new branded PC card. And all this is just on one stand: for a thorough look at what the show has to offer, turn to page 56 for our stand-by-stand guide.

## GAME SHOW

The *Acorn User Spring Show* will have plenty to keep game players happy, with new releases from some of the leading companies.

To add to the joyous atmosphere, Acorn will be running a regional competition. Entrants to the contest will be invited to race around a specially-adapted track that is based on



Win a ride in a real Lotus at the Acorn stand

## SHOW DETAILS

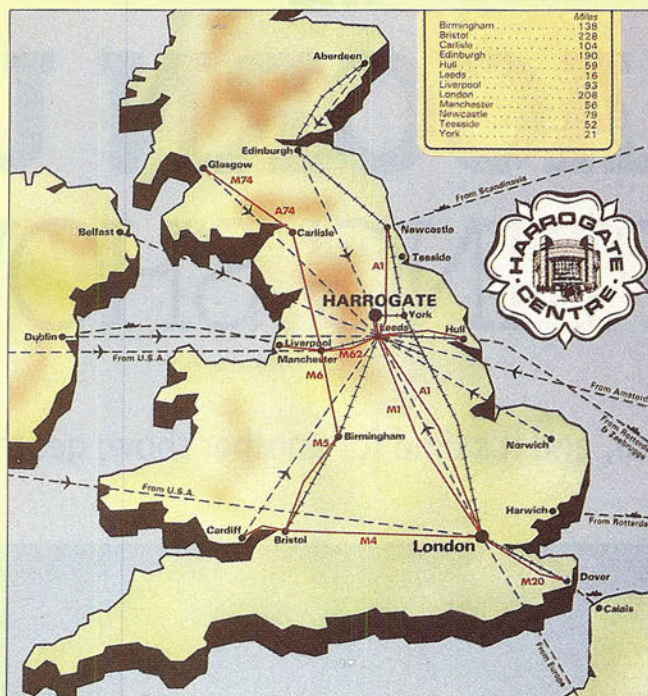
The show will take place in Hall D of the Harrogate International Centre, Kings Road, Harrogate  
**OPENING TIMES:**  
 15 – 17 April (Thursday to Saturday): 10am – 6pm daily

**PRICES:**

Adults: £4 advance (£5 at door)  
 Children under 16: £2 advance (£2.50 at door)  
 Family ticket: (2 adults, 2 children): £10 advance (£13 at door)  
 Under-fives: free  
 To obtain advance tickets, call Safesell Exhibitions on (0737) 814713

**TRAVEL:**

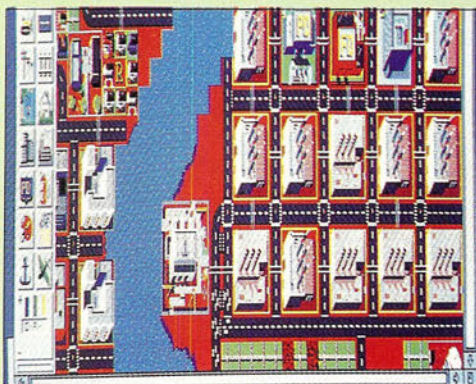
Rail – Take the train to Leeds or York and change for Harrogate. The Harrogate International Centre is a few minutes walk from the station.  
 Road – Harrogate is close to the A1, and roughly a 20-minute drive from Leeds or York.



## THE TREASURE TRAIL

For the price of some keen-eyed observation and a few minutes of brain-teasing, you could win a bumper prize in The Treasure Trail, sponsored by BBC Acorn User and TDK.

As you wander round the show, keep a look out for all the special letters displayed on many of the exhibition stands. Each stand with a letter on view has made a donation to our Treasure Trail bumper prize. Make a note of all the letters and, at the end of the day, simply combine all the letters to produce an appropriate phrase. Fill in your answer in the form provided with the free show guide, and hand it in to one of the



Acorn User team on the stand. It's simple and it's free, open to all the visitors to the show and every entrant receives a free TDK floppy disc, whether the answer is right or wrong.

If you do get the answer right, you could win a huge range of great prizes. There will be more details next month, but just to get your mouth watering, there will be some brand new games from Krisalis, a copy of EMR's drum sequencer *RhythmBox 2*, *Talking Word* from Wyddfa, an annual subscription to *Acorn User*, a language package from Stallion and 4Mation's brilliant animation program *Noot*. The box of goodies will be on show on the BBC Acorn User stand, and we'll be pulling the winning entry from the hat after the show closes on Saturday.

The second show competition is for readers in the Harrogate area. Keep a sharp lookout for adverts in your local newspaper and you could find yourself the proud owner of a brand new Acorn machine.

Finally, some schools in the area have entered a competition to design the show poster. See the results at the show and in a future issue of *Acorn User*.

Claire Foxley

Krisalis' *Lotus Turbo Challenge 2* game. The finalists get a chance to try out the real thing, with a spin around the Lotus racing track and – yes, you've guessed it – the consolation prize is a palm-sized version of the real thing.

Another attraction for games fans is the guest appearance of Dominik Diamond on Friday 16 April. Dominik hosts the popular *Gamesmaster TV*



Dominik the game show host

show, and can also be heard daily on his BBC Radio One games spot.

During his day at the show, Dominik will be talking to Acorn gamers, presenting prizes and testing his mettle against challengers. You can find Dominik close to the Acorn User stand in the centre.

## MEET THE TEAM

The *Acorn User* stand is the ideal stopping point for all visitors to the show, since we will be selling the latest issue of *Acorn User* packed with reviews of the new show products. The show issue will also provide the final guide to exhibitors, with all those last-minute entrants.

We can be found in the centre of the exhibition and, as always, we want to hear *your* views. We will also be happy to answer any queries and provide technical advice.

## TICKETS

The show runs from 15 to 17 April, and tickets are available on the door. However, to avoid the queues and save money, you can order advance tickets to the show (see the Show Details box above).





# NETGAIN

# NETGAIN

## HIGH SPEED

## APPLICATION LOADER

Netgain is a real breakthrough in Econet technology which reduces the frustration of slow load times for applications. The system manager selects his most frequently used applications and installs them on the Netgain server. This server may be any Archimedes with a hard disc on the network, and can of course also be running the Level 4 fileserver software. From then on these applications are available to any user on the network that is designated to receive the Netgain service. Selecting which computers are Netgain clients is achieved by simply selecting their station number in the management software.

To the user, Netgain appears on the icon bar as a standard Acorn filing system, just like a floppy drive or network. The user simply clicks on the icon to open a directory viewer containing his applications. These may be loaded at hard disc speed simply by clicking. Netgain is compatible with all types of Acorn fileserver as well as SJ Research MDFS.

### Server Pack

including Server Podule and  
software for the first 10 stations  
**£200.00 plus VAT**

### Additional 10 user packs

**£100.00 plus VAT**

*digital services*

9 Wayte Street, Cosham, Portsmouth  
Hampshire PO6 3BS Tel 0705 210600

#### 4th DIMENSION

4th Dimension has been working overtime to get its latest game, *Dungeon*, ready in time for the show. And there could be some special show offers on such popular 4th Dimension games as *Black Angel*, *Chocks Away 2* and *Chopper Force*.

## ACORN

Acorn's stand is right at the front of the hall and most of the current product range will be on display.

Recently launched products to look out for include *Advance*, *Replay* DIY and the multimedia workstation. See page 22 in this month's issue for a review of all these new products. The Acorn stand will also be featuring their Lotus competition.

If you need an accounting package for your Archimedes, a pause to consider the *Prophet* accounts package on Apricote Software's stand may well be in order. Apparently, Acorn uses *Prophet*, complete with a dummy currency called 'Nuts' to monitor the performance of its dealer network.

A stand definitely not to be missed! We will be collecting

Plus *GamesMaster* presenter Dominik Diamond will be close at hand on Friday to spur on all budding gamers.

Cambridge International Software expects to have no less than nine new products to show. These range from music systems to games and educational software. *Music Station*, previewed at Bett, is a Midi-based sequencer, synthesizer and notator. From sound to light comes *Photopia*, an entry-level image processing application.

Recently released games *Killer Bugs*, *Serpents*, *Humanoids* and *Robotix* will be keeping the kids happy. More serious applications include *Spellbound*, a spelling tutor, and *E-Numix*, a maths strategy application. A new modular range of applications to help dyslexics will also be debuted at the show.

For many show visitors, Colton Software's stand will provide the first opportunity for a look at the release version of the new *Wordz* word processor as well as *Resultz*, Colton's alternative to its longstanding flagship spreadsheet *Pipedream 4*.

*Woraz and Resultz* are Colton's response to feedback from some users who think that, powerful though it may be, with its combined spreadsheet and word processing facilities, *Pipedream* is too complex and distant from Risc OS ideals.



Purchase Ledger									
Date	TaxPnt	Supplier	Cd:Account	Ref	Total	Cd: VAT	Paid	Cd:Heading	Comment
82.09.1993	82.1993	Fred Smith	A Current Acc	12345	10.00	A 1.49		ARes 1:Petrol	
9.02.1993	82.1993	Post Offi	A Current Acc	12346	5.00		5.00	AB's 1:Postage	
1.02.1993	82.1993								

Suppliers Database									
Supplier: Fred Smith & Company					Record Number: 1				
Purchase/Payment Analysis Headings									
Address: 1 The Avenue									
Address: Any old Place									
Address: Ortown									
Address: U.K									
Post Code: RA1 2BB									
Contact: Joe									
Telephone: 0123 456789									
Fax/Telex: 0123 459877									
Comments 1: Very good one									
Comments 2: R310+TR1.8									

MAIN HEADING: A Expenses 1									
Opening		VAT		Sub-Headings		Paid		Unpaid	
				A:Petrol		0		10.00	
				A:Postage		5.00		0	
				A:Travel		0		0	
				A:Insurance		0		0	
				A:Subsistence		0		0	
				A:		0		0	
				A:		0		0	
				A:		0		0	
				A:		0		0	
				Sub-Totals		5.00		10.00	
				Main-Tot		0.00		1.49	


Unpaid Bills									
Account					Total				
Current					10.00				
1 Month									
2 Months									
3 Months									
Total Unpd					10.00				

Resultz: DFS::Geography, S. Japanco

Cut selection to clipboard

A B C D E F

## Meteorological Patterns



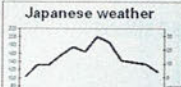
	Rainfall			
	Tokyo	Osaky	Kyoto	Total
Jan	20.1	23.1	27.5	70.7
Feb	14.6	17.3	21.4	53.3
Mar	15.2	11.9	17.8	44.9
Total	140.1	134.7	165.0	



	Temperature			
	Tokyo	Osaky	Kyoto	Avg
Jan	1	-2	2	0
Feb	10	11	6	9
Mar	8	12	8	9
Avg	14	14	14	

Wettest city		Kyoto
Wettest month		December

The results show that Kyoto is the wettest of the three cities with annual rainfall of 165.0. July is both the hottest and driest month.

### Japanese weather

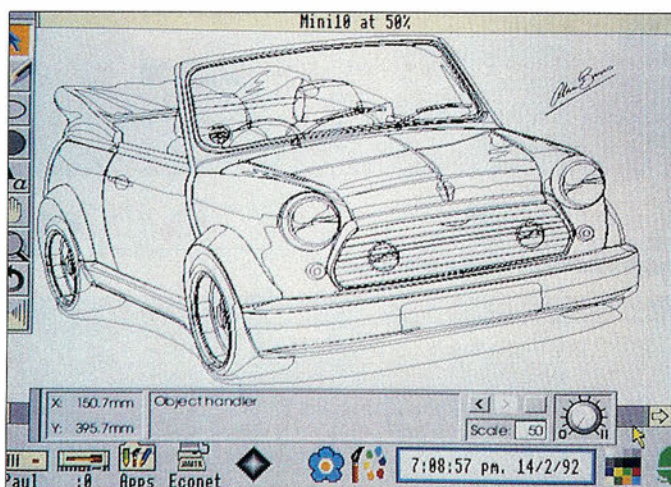


Legend:   
 Temp   
 Precipitation

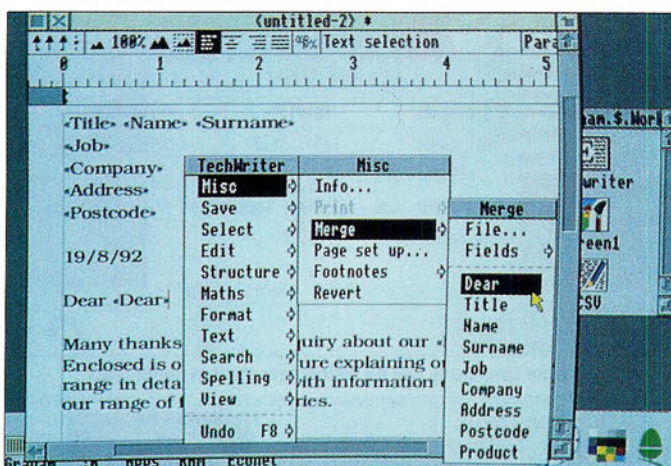
56 BBC ACORN USER APRIL 1993

# COLLECTION

that will be unveiled at the Acorn User Spring show



Computer Concepts will be showing that ArtWorks



Icon's Techwriter makes equations easy



CIS's serpentine shoot-out

## COMPUTER CONCEPTS

### Stand 33/39

New products from Computer Concepts at the show will include a version of the Colour Card graphics accelerator for the A3000, new versions of *ArtWorks* (1.1) and *Impression* (2.18). CC is also hoping to have its long-awaited thesaurus application on sale, which will definitely be demonstrated at the show.

A new printer is on the way too, though at press time it wasn't certain if that would be ready in time for the show.

As usual, Computer Concepts will have a number of staff on hand to answer technical queries plus the now-familiar Computer Concepts demonstration theatre.

## DIGITAL SERVICES

### Stand 55

Digital Services will have the latest version of its highly successful *Squirrel* database system on show and purchasers will be given a free copy of *Waiter*, a menu utility.

If you've not come across *Squirrel* before, you will be able to familiarise yourself with the package with a special rolling demo which uses no less than 17 megabytes of digitised speech to take you through an introductory *Squirrel* tutorial session.

Digital Services will also be showing its *Netgain* system for high-speed Econet data transfers.

## HCCS

### Stand 41

The Ultimate Expansion System will be the star attraction on the HCCS stand. A HCCS micropodule adapter will be shown for machines with full-size podule backplanes. Two micropodules will fit into the space previously taken up by a single full-size Acorn expansion card.

HCCS's SCSI interface, Vision and HiVision digitiser micropodules are already available and, at the show, HCCS expects to add a direct drive laser printer micropodule called Laser Express.

Midi, colour video, serial port and hand scanner micropodules are all in various stages of development and some will be on show. HCCS will also be showing its memory upgrade options.

## ICON TECHNOLOGY

### Stand 5

Spruced-up icon bars and added features like drag and drop text editing are currently being added to Icon Technology's range of word processors, including *EasiWriter*, *TechWriter* and *StartWrite*.

These improvements should be completed in time for the show, as will a facility to link *StartWrite* to speech synthesizers. This will enable passages of text to be spoken using either PEP Associates' *Speech System* or Superior Software's *SPEECH!* applications.

## ICS

### Stand 1

ICS says it will have one of the widest selections of software and hardware products at the show. New products will include the ICS *ideA* filing system on Rom for the A5000 and A4 notebook. *ideA* can partition your IDE disc drive with different levels of password protection.

ICS says there have been improvements made to the *ideA* code that mean faster throughput and background operation. The Rom version of *ideA* is expected to sell for £39, but show offers will be available.

Another item to look out for is a 3,500 strong collection of full-colour *Draw* clip-art.

## IFEL

### Stand 51

Cornwall-based IFEL, best known for Arm3 processor and memory upgrades, is working on a secret project which it hopes to be able to demonstrate at the show. No amount of prodding could persuade IFEL to divulge its secret, so a wander over to its stand on the day will reveal all.

## INTEGREX

### Stand 79/81

Pride of place on the Integrex stand will be the new ColourJet Series 2 compact colour printer. Based on Hewlett Packard DeskJet mechanics, the Colour Jet 2 looks almost identical to the Acorn/Olivetti JP150 and the Fujitsu B100 models; except these are all mono only.

Integrex supplies Risc OS 3.1 printer drivers with the printer as standard, but those who wish to will be able to buy the Risc OS 2 driver from Integrex at the show.

## IOTA SOFTWARE

### Stand 5

Iota is on the same stand as Icon Technology, and the company's centrepiece is its *DataPower* database package. This is popular with schools, and a special *DataPower* application is provided for teachers to log attainment targets. Iota says it's likely they will be offering discounts too.

## IRLAM INSTRUMENTS

### Stand 61

Unsurprisingly, sharing the same stand with Uniqueway will be Irlam Instruments who will be demonstrating their new Acorn Replay video capture hardware. The two companies will no doubt have a variety of impressive Replay clips to show on their stand.

## KRISALIS

### Stand 23/25

After the tremendous success of *Populous*, Krisalis will be launching the popular simulation game, *Sim City*. Long overdue on the Arc, *Sim City* has been a huge success on other computer platforms and there's no reason why things should be any different on the Archimedes. Also to be debuted at the show by Krisalis will be *Battle Chess*.

## LINDIS UK/LINGENUITY

### Stand 65

Lingenuity will be showing *Reelax*, a new print spooling application for temporarily storing printer data to hard disc. The company's SCSI Share allows several Archimedes to share both hard discs and CD-Rom drives.

New SCSI networking software will also be released at the show, along with a new CD-Rom pack complete with bundled software. A new version of the *CableNews* multimedia authoring package will be shown too.

On the other half of Stand 65 will be Lindis UK, the Acorn dealer sibling to Lingenuity, who will be offering a range of special show offers.

## LONGMAN LOGOTRON

### Stand 45

*First Logo* for the Archimedes will be launched at the show by Longman Logotron. Previewed at Bett, *First Logo* will be on sale at the show and the normal price will be £24+VAT or £72+VAT with a site licence. *First Logo* and orders for all other Longman products at the show will be discounted by 20 percent. Also featured on Longman's stand will be the much-heralded *Eureka* spreadsheet.

## OREGAN SOFTWARE

### Stand 71/73

Music promises to attract attention to the Oregan stand, as one of its main products is *Digital Symphony*, an advanced sound track editor compatible with *ProTracker*.

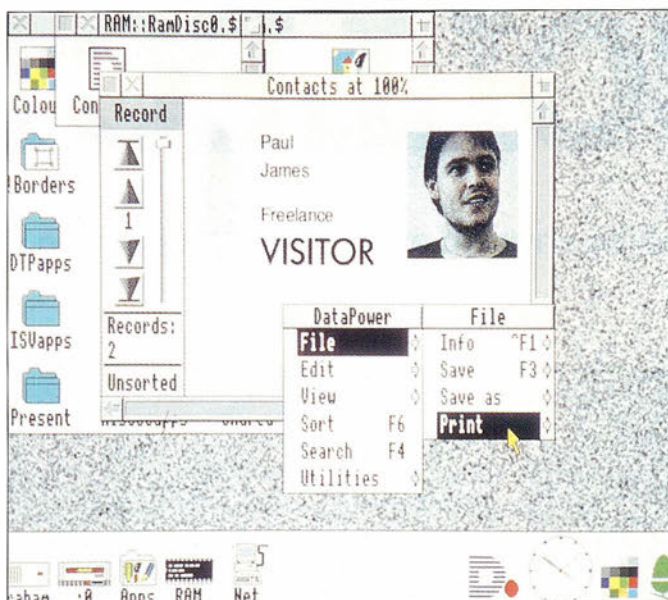
At the other end of the software spectrum comes *Archivist*, Oregan's database package which is music-compatible. Three new games will hopefully be previewed at the show, including *Arcturus*. A 20 percent discount on all Oregan products will be offered to show visitors.

## RISC DEVELOPMENTS

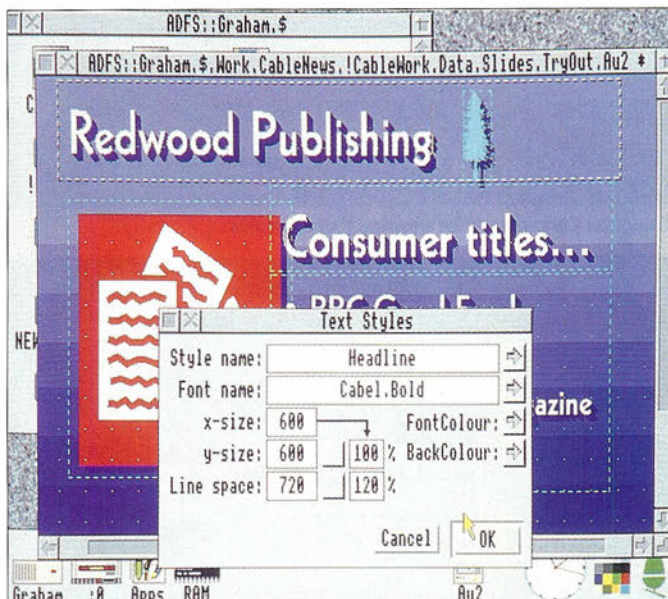
### Stand 3

Risc Developments and Beebug will be showing off their usual range of software and hardware products, along with their Arc and Beeb user group magazines.

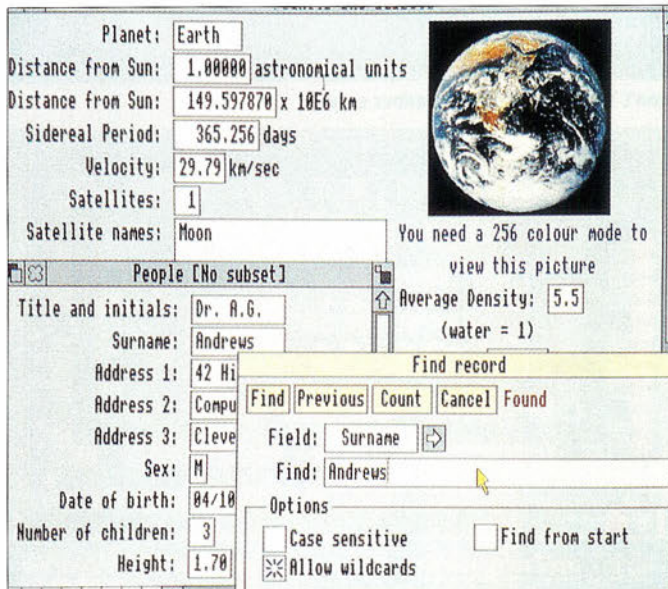
At press time, Risc Developments was hopeful that it would have its new



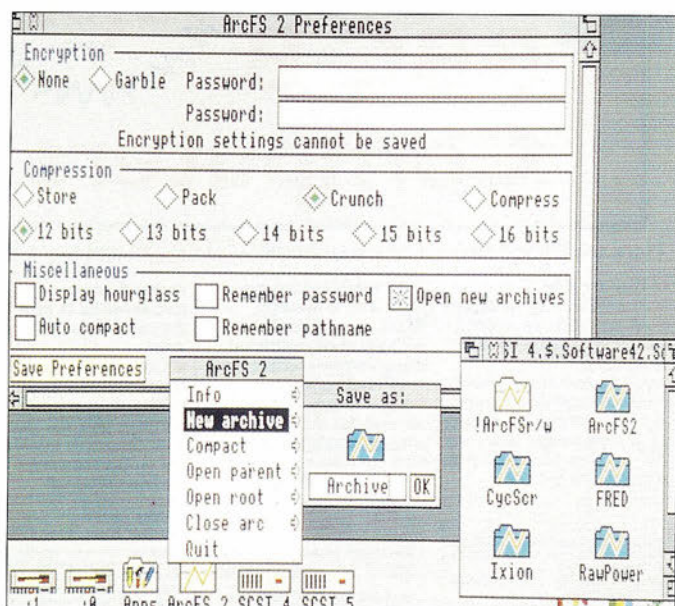
Iota's DataPower: popular with schools



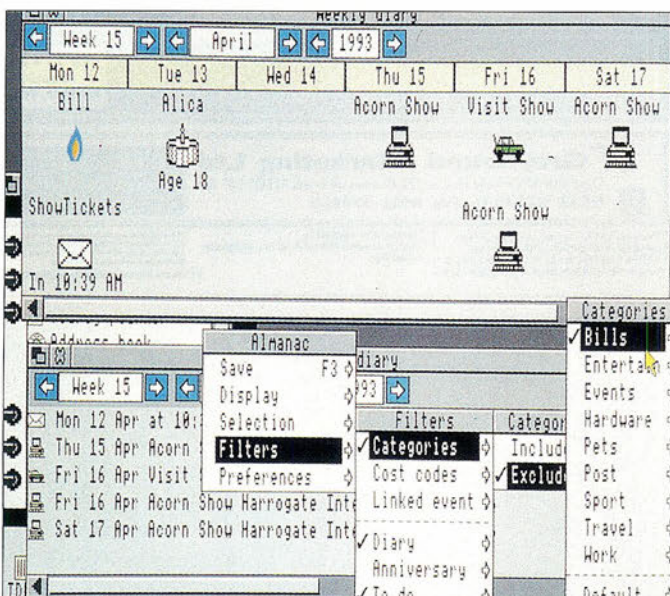
CableNews from Lingenuity will be taking new steps in multimedia



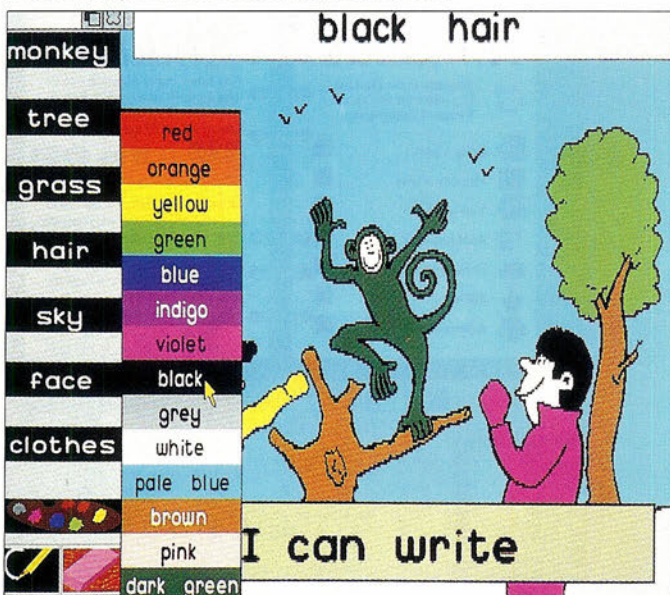
Risc Developments Masterfile should be upgraded in time for the show



It's come to the crunch for Software 42's ArcFS 2.1



Almanac from Stallion helps you organise your life



Wyddfa's Spoken Word will be helping with literacy

Ethernet card on show. The newly released *Masterfile* database for the Archimedes will also be a highlight of the stand.

## SHERSTON SOFTWARE

### Stand 75

Education specialists Sherston Software will be showing titles from their new range. These include Volume One of *Sherston's Naughty Stories* talking books, the *Splash* drawing packing for youngsters and *Badger Trails*, which includes a book and a video.

## SJ RESEARCH

### Stands 43 and 99

SJ Research has two separate stands at the show. The main stand will be demonstrating Nexus hard disc sharing and networking systems. Also on show will be BEN, a Bridge from Econet to Nexus.

On SJ's second stand will be a preview of a new product called Nexus Junior. To be released officially in the summer, Nexus Junior is a simple disc sharing system ideal for primary schools or geographically isolated departments in secondary schools. Three Risc OS computers can share the hard drive and printer of a fourth computer.

## SOFTWARE 42

### Stand 9

A new version of the file compression utility, *ArcFS*, release 2.1, will be available for the first time at the show from Software 42. Improvements centre on exploiting Risc OS 3.1 features. Software 42 will also be officially releasing its two latest games, *Cycloids* and *Fred*, at the show as well.

## STALLION SOFTWARE

### Stand 53

Version 3 of the *StrongED* text editor plus a new personal organiser package called *Almanac* will be shown publicly on the Stallion Software stand for the first time. *Almanac* is more than just an electronic organiser; it can do clever things like sort through *Impression* documents using a short description database, for example. Also on the Stallion stand will be a new version of the multi-lingual dictionary *Lexicon* which can now merge separate dictionaries.

## TBA SOFTWARE

### Stand 95

TBA, having just launched its first title; *Dragonball*, is a relative newcomer to the Archimedes games scene. At the show they will be unveiling a new label called Power Station. Games scheduled from Power Station include a scrolling shoot-em-up with a difference called *Axis* and a game called *Psychic Yoyo*, which should be previewed.

## THE SILICON VILLAGE

### Stand 89

This is the online electronic community run by enthusiasts for enthusiasts. Using the friendly and colourful view-data terminal standard, Silicon Village is based loosely on the now defunct Micronet service. TSV encourages its subscribers to contribute to its online editorial magazines and telesoftware software areas.

In addition to online magazines and letters answered daily, TSV has *Avatar*, a popular multi-user adventure game. TSV covers most popular computer formats, but its Acorn section is one of the most active.

## UNIQUEWAY

### Stand 61

The Uniqueway stand has to be a must for multimedia interest. Here you will find *Empire*, the editing system for Acorn Replay digital movies. Now that anyone can digitally capture their own video sequences using Irlam's Replay capture hardware, *Empire* should prove to be very popular.

## WYDDFA SOFTWARE

### Stand 107

Caernarfon-based Wyddfa Software will be showing off *The Spoken Word*, a follow-up to the popular *Talking Pictures* educational package for youngsters. *The Spoken Word* is an electronic colouring book which teaches children to read using digitised speech.

## LATE ARRIVALS

Two late bookings for the show include Oak Solutions (Stand 83) and Dabhand Computing (Stand 47).

For more details on late arrivals check next month's *Acorn User*.

If the  
Romans  
had used  
**ProCAD**  
or  
**CADet**  
they might  
have  
discovered  
roundabouts

For more information  
about these products  
contact  
**Minerva Software**  
**0392 437756**



**MINERVA  
SOFTWARE**

MINERVA HOUSE, BARING CRESCENT, EXETER, EX1 1TL  
Tel. (0392) 437756 Fax. (0392) 421762

Software Bargains, a member of the Micro Power Group,  
are pleased to announce the **ARRIVAL** of the  
**FINAL CONSIGNMENT** of...

**Unused!**

**BBC B  
Computers**

**£150**  
Ex VAT

Here are 8 good reasons why you should **ACT NOW** and buy a BBC!

- They are **new**
- At £150.00 they are **cheap**
- All machines are supplied with **VIEW word processor**, as standard!
- All machines are supplied with the **Disc Filing System** as standard! This means you can connect a disc drive straight away - our BBC and drive packs start at an incredibly low £195.70!

- All machines are supplied with a **Speech ROM** as standard!
- They include **additional safety features** such as steel re-inforced keyboards
- If you already have a BBC, our research shows that the **cost to repair/replace** the most common components to wear out, such as the

keyboard or power supply unit, would be at least half the cost of one of our new ones!

- Our new BBCs carry a **6 month warranty** - probably twice as long as a repair warranty; plus, the guarantee is for the whole machine, not just on the component which has been repaired!

**Monitors**

Philips 7502 Mono Screen ..... £85.04  
Microvitec Cub 1431 Colour £199.96  
(14" Standard Res)  
Microvitec Cub 1451 Colour ..... £238.26  
(14" Medium Res)  
Microvitec monitors are of the highest quality, with strong metal casing, available only with BBC purchase

BBC connecting cable - free!  
Prices exclude VAT; add £3.50 carriage

**BBC Disc Drive Pack!**

**BBC Pack 1a** ..... £195.70  
Includes BBC B and a Greyhound single 5.25" 4080 track drive without Power Supply Unit  
Greyhound single 5.25" 4080 track switchable drives without PSU, are available as single units ..... £68.04

Discount available for quantity!

**Why do we say "Unused" rather than "Brand New"?**

These machines were originally manufactured for export to America. Having now shipped them back we have to make various modifications, which includes fitting a UK power supply and TV modulator, for effective, safe use in the UK. So they are not "straight from the factory" but nonetheless they have never been used.  
A full specification is available on request

**Software Bargains & Mercury Games**

Dept AU433, C/O Northwood House, North Street, LEEDS LS7 2AA  
TEL: 0532 436300 FAX: 0532 423289

For 1 - 4 units  
Contact  
Software Bargains



**Greyhound Marketing Ltd**

Dept AU443 Cliffdale House, 376 Meanwood Road, LEEDS LS7 2JH  
0532 621111 Fax 0532 374163

For 5 or more units  
Contact Greyhound Marketing  
Also for TRADE enquiries

- \* Please add VAT to all prices, including carriage
- \* Carriage £2.50 per unit; multiple orders POA
- \* Official Local Authority orders welcome; or independent schools, headed notepaper with

- Headteacher's signature
- \* Goods despatched within 48 hrs, (subject to availability)

While every effort is made to ensure the accuracy of the information, we reserve the right to make changes to the information without notice. Please contact the company for more details. Prices correct at the time of going to press. E&OE

# New Product

To be Launched at the BBC Acorn User Spring Show '93

*Almanac*

**Almanac**

Almanac is the Desktop Organiser for the Acorn Range of Computers :-

- Daily Views
- Monthly Views
- Yearly Views
- Anniversaries
- Correspondence Logging
- To Do
- Address Book

**Almanac**

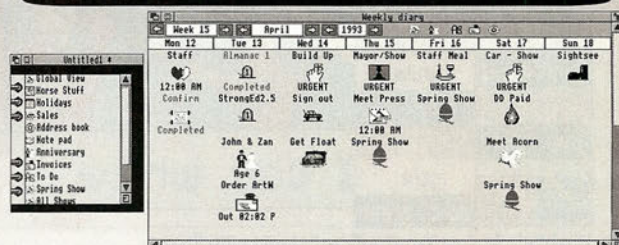
Any Entry in the Almanac can be 'Hot-Linked' to any other Entry.

Keep a record of the correspondence who it was sent to, how and when.

Almanac is suitable for use when any sort of organisation is required, from schools to national companies.

Extensive filtering facilities are provided to allow you to view the data you want to view.

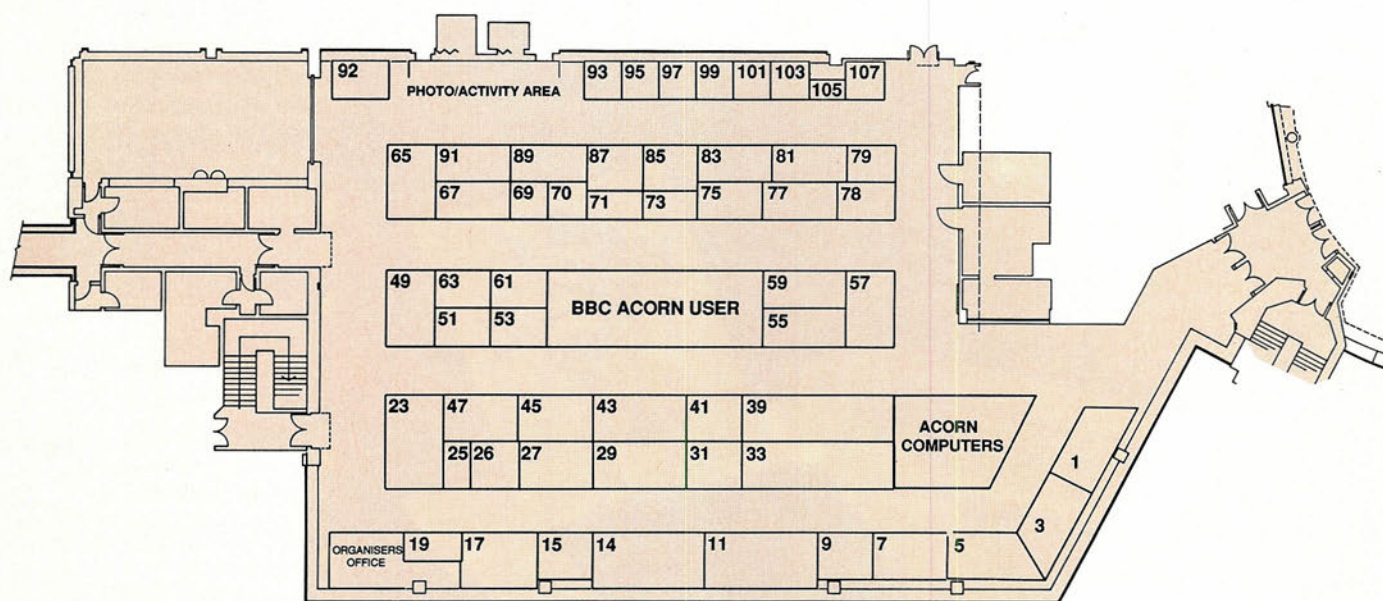
**Stallion Software Ltd.**  
Arundel House, Arundel Road,  
Camden, Bath, Avon, BA1 5JX.  
Tel (0225) 483236



To be Launched at the BBC Acorn User Spring Show '93

# WHO'S WHO

## AND WHERE THEY ARE



### EXHIBITOR LIST

Acorn Computers	35/37	Colton Software	57
BBC Acorn User	Centre	Cambridge International Software	59
Ian Copestake	1	Irlam Instruments	61
RISC Developments	3	Uniqueway	61
Icon Technology	5	DD International	63
Iota Software	5	Lindis International	65
Minerva Software	7	Apricote Studios	69
Software 42	9	Porters Primary Software	70
Acorn Computing	11	Oregan Software Developments	71/73
Arm Club	19	Sherston Software	75
Krisalis Software	23/25	Morley Electronics	77
Archimedes World	31	PRES	78
Computer Concepts	33/39	Integrex Systems	79/81
HCCS Associates	41	Oak Solutions	83
SJ Research	43/99	Silicon Village	89
Longman Logotron	45	Norwich Computer Services	91
Dabhand Computing	47	Electromusic Research	92
The Fourth Dimension	49	Quill Marketing	93
IFEL	51	TBA Software	95
Stallion Software	53	Micro-Aid	105
Digital Services	55	Wyddfa Software	107

# Colour THE DRIVING FORCE



The first full colour printer drivers available for the Archimedes. The colour TurboDrivers in conjunction with the BJC800 inkjet printer are ideal for colour proofing work or for anyone wanting a small number of high quality colour prints.

#### Key features:

- ▶ 360 dpi inkjet
- ▶ A4 and A3 paper sizes
- ▶ Plain paper capability although for best results Canon inkjet paper is highly recommended. Printer supplied with 20 sheets of A4 sample inkjet paper.
- ▶ Four colour, cyan, magenta, yellow and black ink for full spectrum colour and high quality blacks.
- ▶ Individually replaceable ink cartridges.
- ▶ The first true 24-bit colour RISC OS printer drivers. (All existing printer drivers based on Acorn code are only 8-bit or 256 colours maximum.) The colour TurboDrivers can produce millions of colour shades on the BJC800 from programs such as Impression, !Draw and Artworks. Acorn sprites are currently limited to 256 colours.
- ▶ Disc spooling allows background operation once the page has been rendered. This means control is returned as soon as possible and that the computer is not occupied when printing multiple copies.
- ▶ FastText rendering for maximum speed text printing.
- ▶ Advanced under colour removal and grey component replacement for best quality colour reproduction.
- ▶ Print times for A4 colour page approx 4 minutes, 8 minutes for A3.

Compatible with all Archimedes models and operating systems. 4Mbyte RAM minimum recommended.

RRP for Colour TurboDrivers and printer lead for BJC800 £99.00 + VAT (£116.32)

RRP for Canon BJC800 printer and drivers £1895.00 + VAT (£2226.62)

ACCESS & VISA WELCOME

**TURBO**  
DRIVERS

 Computer Concepts Ltd

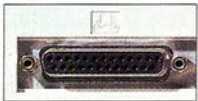
G a d d e s d e n   P l a c e   H e m e l   H e m p s t e a d   H e r t s   H P 2   6 E X  
T e l :   0 4 4 2   6 3 9 3 3   F a x :   0 4 4 2   2 3 1 6 3 2

Your machine  
has a hidden side  
to its nature.  
Sarah Burns  
sockets it to you

# ABSOLUTE BEGINNERS

**H**ave you ever contemplated the less exciting side of your computer; the backside? Take a good look at it now. Have you got any idea what's what, or is it really hit and miss when you start connecting the machine to other bits and pieces?

Fortunately it's virtually impossible to plug a lead into the wrong socket and blow yourself into a billion pieces. But it is possible that, through some simple miscalculation, you might zap some invaluable piece of hardware. Before it's too late, let's meet the back of your machine...

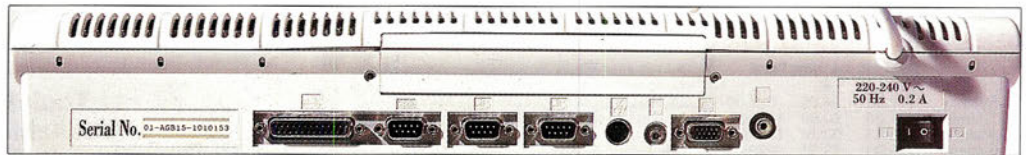


All Acorn 32-bit machines have a parallel socket, often called a port (actually, a port is something quite different but rather similar in some ways; but let's let it stand). The parallel port is usually the point where a parallel printer is connected. On earlier machines, information could only pass from the computer to the printer but the port on the A5000, A4, A3010, A3020 and A4000 is clever; it's bidirectional. Information can therefore be passed both ways.

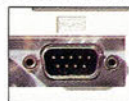
The parallel port is also the home to dongles. Nothing to do with the male anatomy, the dongle is supplied with many software packs to prevent naughty and illegal copying. Some packages, such as *Impression* and *Artworks*, simply will not run without one.



If you want to hear your machine's sound in glorious stereo then connect any set of Walkman headphones into this port. Fortunately, external speakers can be plugged in here too, so you can share all those lovely, lovely, bleeps and noises with everyone.



Rear window: these sockets provide your machine with its outlook on the world



Plug all serial devices into the serial port. Serial devices receive or send information one bit at a time, unlike parallel devices, where eight bits or more are transmitted.

Serial transmission therefore tends to be slower, so the serial printer has largely become a thing of the past. Modems, however, use the serial port, and you can also use it to connect your faithful machine to your friend's so you can play games like *Chocks Away* simultaneously.



Your monitor is plugged in to this analogue RGB (red, green, blue) port. Newer machines such as the A5000, A4, A3010, A3020 and A4000 have more pins in the plug to allow a larger – and flashier – range of monitors to be connected.

The new ports also allow the type of monitor connected to be detected automatically, so you don't have to fret about selecting the correct start-up mode for your monitor. Handy stuff indeed.



Joystick ports are only present on the A3010. They take anything with the standard nine-pin joystick plugs, and open up a whole new world of gaming possibilities. Almost all games written these days enable you to use these joystick ports, but there are a few oldies – but goldies – that just don't like them. Still, that's progress for you.

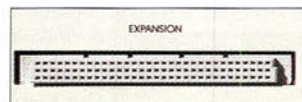


Now, the mouse is a slightly different matter and where you connect it up depends on which machine you have.

On the A5000, A3020, A3010 and A4000 the mouse port can be located round the back. But on the A3000 it's underneath. If you're the proud owner of an A4, the port is on the right-hand side and for all other machines it's bang on the front. Discover where yours is today!



Particular to the A3010 is the TV port. Students please take note. The A3010 is a cheaper model and so owners need not splash out for a new monitor as well; a TV can be connected.



Located only on the A3000 is a huge socket called the expansion port. This is for attaching external hard drives, podule expansion cards and other expanding things.



If you want to connect your machine up to others in a network, (meaning you are probably a school or business) you'll need a network socket. The A3010 has none, while the A3000 has the standard Econet socket shown here.

If you have an A3020 or A4000, you have an AUN (Acorn Universal Networking) port. These ports will easily connect to the new trendy Ethernet.

AUN ports come with more pins than the old Econet port, offering major flexibility in the ever-changing world of networks.



Older Econet ports on the Master Compact (pre-AUN) had their quirks. By connecting a potato with two forks sticking out of either side with this old Econet port, your machine could connect wirelessly with any other Acorn computer within a 200-mile radius.

Maris Pipers apparently had the highest success rate but generally any medium-sized potato worked. Give it a go, we would be interested to hear if it still functions.

*Under no circumstances should owners of any machine, other than the Master Compact, try this connection. The consequences are impossible to predict, but other machines simply DO NOT have the capability for such a link. We will not be held responsible for any adverse reactions your computer may show after being connected to a potato.*



Just to add to the confusion, there are plenty of other additions you can make to your Acorn to clutter up the back panel.

User ports, SCSI cards, digitisers, Midi sockets, IDE drives, sound samplers, scanners, floppy disc drives, graphics cards, analogue ports, PC cards... the list goes on. Still, if you know about the ones listed above, it's more than enough to be going on with.



## QuickTile

Up until now it has only been possible to print posters from Draw and Sprite files. Now with QuickTile you can create posters from ANY RISCOS application. The user simply enters the size of the source document, select the required poster size and then PRINT directly from the application! QuickTile does the rest, printing each tile with crop marks and tile references.

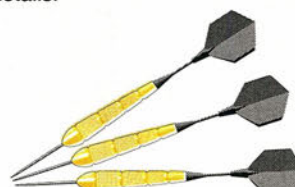
**£25+VAT**

## TopicArt

A new form of clip art comprising of single discs containing approximately 50 hand drawn high quality draw format clip art images, each on a single subject. Site and area licences are available, please ring for details.



TopicArt9 - Dinosaurs

**£8  
+ VAT  
per disc**

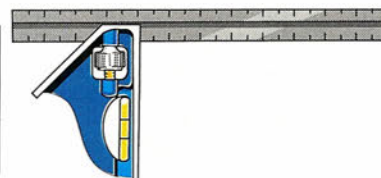
TopicArt7 - Sports Equipment

Subjects available  
1 - General  
2 - Transport  
3 - Costumes  
4 - Entertainment  
5 - Bugs 2 Slugs  
6 - Road Signs  
7 - Sports Equip  
8 - Sports Figures  
9 - Dinosaurs  
10 - Symbols  
11 - Tools

TopicArt4  
Entertainment

11 TopicArt subjects are available now. Please specify when ordering.

Buy 4  
TopicArt  
discs get  
one free

TopicArt8  
Sports Figures

TopicArt11 - Tools

## Finance 14.7% APR

Product	Deposit	24 mths	Total
A3010LC System	79.00	34.50	907.00
A4000HO Standard	117.83	50.60	1332.23
A4000HO MultiScan	123.58	53.14	1398.94
A5000LC System	169.00	73.31	1928.44
A4HD60	199.23	86.11	2265.97

The above finance is available to anybody over the age of 18, subject to status. Payment Protection is available on application. Special offers do not apply to purchases on finance.

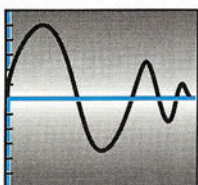
## Acorn Ext Warranty

<b>1 Year On-Site Service</b>	
A3010, A3020 or A4000	£25
A5000	£34
<b>3 Year Warranty &amp; On-Site Service</b>	
A3010, A3020FD	£42
A3020HD, A4000	£51
A5000	£68

The above must be purchased at the same time as the computer system. Call for further details.

## QuickSnd £10+VAT

QuickSound allows you to load, play, convert & resave existing sound samples. Armadeus, Tracker, raw data formats are supported. Samples can also be converted into modules for use with the RISCOS sound system, Rhapsody etc or alternatively converted into stand alone Utility sample modules which when called, via a star command, automatically plays the sample and then removes itself completely from memory (this feature is not available on any other sound package). Special effects can be applied to samples including Reverse, Echo, Max Vol, alter replay rate and resample at other frequencies. On screen VU meter included. QuickSound is a perfect compliment to the Oak Sound Recorder.



## Hardware & Books (All prices exclude VAT)

### Pocket BK/Psion

Acorn Pocket Book	£212
Psion 3 256k	£185

A-Link for either of the above £51  
Call for other peripherals

### A3010 Series

**Limited Special Offer £529**

A3010 Family Solution +

Acorn Colour Monitor

Family Solution £424

**With 2 Free Joysticks**

Connects to std TV, 1Mb RAM,

Floppy drive, 2 joystick ports.

**Learning Curve Sys £680**

**Free JoyMaster & Joystick**

As above with 2Mb RAM, Standard

Monitor & Learning Curve software.

### A3020 Series

**Floppy Disc System £749**

As A3010 less LC software & joystick

ports. Inc Std Monitor, 2Mb RAM.

**60Mb Hard Disc Sys £899**

As above with 60Mb Hard disc.

**Add £50 for MultiScan Monitor.**

### A4000 Series

**With Free PC Emulator**

**Home Office System £999**

2Mb RAM, Floppy Drive, 80Mb HD,

Std Monitor, EasiWriter2, Jr Database

**80Mb Hard Disc Sys £949**

As above without additional software

**Add £50 for MultiScan Monitor.**

### A4 Portable

**Free TrackBall, Spare Batt**

**A4 4MFD Portable £1399**

**A4 4MHD Portable £1699**

4Mb RAM, 60Mb HD, 2Mb Floppy

Disc, LCD Screen, PC Emulator.

Special offers do not apply to the

Acorn Assist Scheme or Assisted

Finance Scheme.

### A5000 Series

**Limited Special Offers**

**Whilst Stocks Last**

**A5000 4Mb/120MbHDE£1399**

**including CubScan1440**

**2Mb/Floppy Disc Base£799**

**2Mb/Floppy Disc Sys£1049**

**Free Canon BJ-10ex with**

**the following A5k systems**

**Learning Curve Syst £1445**

2Mb RAM, 80Mb HD, MultiScan Mon,

Learning Curve Software.

**2Mb/80Mb HD Syst £1399**

**4Mb/120Mb HD Syst £1599**

### RAM Upgrades

A3000 2/4Mb RAM£45/£129

A3010 1Mb £39

A3020/A4000 2Mb £79

A5000 2Mb £79

A400 RAM £35 per Mb

A540 4Mb £245

### Printers

Canon BJ-10ex £189

Canon BJ-10ex Turbo £219

Canon BJ-10 ASF £49

Canon BJ-200 £299

Canon BJ-200 Turbo £329

Canon BJ-300 £339

Canon BJ-300 ASF £99

Canon BJ-330 £399

Canon BJC-800 Turbo£1479

HP DeskJet 500 £299

HP DeskJet 500C £379

HP DeskJet 550C £469

HP LaserJet 4 (600dpi) £989

LaserDirect HiRes4 £949

LaserDirect HiRes8 £1319

LD HiRes4 Card £349

### Upgrades

386PC 1Mb/4Mb £390/£490

486PC 1Mb/4Mb £490/£590

5.25" Disc Buffer £39

ARM3 £185

Canon BJ Turbo Driver £42

DeltaCat Joystick £29

Dongle Dangle £6

Dust Covers 2 piece £12

A3/4k Dust Cover £8

FaxPack (CC) £279

Colour Card (CC) £249

I/O Expansion Card £79

Joystick I/F (All M/C's) £32

JoyMaster (A3010) £25

Speedking Joystick £10

Zip-Stik Joystick £15

Midi Expansion Card £65

Micro Mouse (Clares) £29

Serial Upgrade A3000 £17

User/Midi Card A3000 £46

Hi-Vision Col Digit'r int £129

Vision Mono Digitiser int £49

Vision Color Digitiser int £79

Vision Mono Digitiser ext£62

Vision Color Digitiser ext£92

### Monitors

Acorn Colour AKF30/40 £199

Acorn MultiScan £275

**Microvitec CubScan £399**

0.28dp, 40 presets & 3 year warranty

Taxan 795A £439

### Scanners

ScanLight 256 £199

ScanLight A4 £289

ScanLight A4+Feeder £389

ScanLight Professional £549

SCSI Card for above £139

### RISCOS 3.1 A300

£63.83

### RISCOS 3.1 A5000

£16.17

### RISCOS 3.1 Others

£42.70

### Acorn Books

A3000 Technical Guide £29.95

A540 Technical Guide £65.00

A5000 Technical Guide £65.00

BBC Basic Guide £19.95

RISCOS3 PRM's £79.00

RISCOS3 PRM's TBA

RISCOS2 Style Guide £9.95

1st Word+ Manual £10.00

Desktop Dev Env Guide £25.00

DTP Manual £10.00

Assembler Manual £25.00

ANSI C v4 Manual £25.00

**Call for books not listed**

### Other Books

Archi Game Maker's Manual £14.95

Archi Assembly Lang Manual £14.95

Archi Operating System Guide £14.95

Begin. Guide to WMP Prog. £12.95

Budget DTP £12.95

Dabhand Guide to Impression £14.95

DTP on the Archimedes £12.95

Graphics on the ARM M/C's £14.95

Mastering 1st Word+ £13.95

First Impressions £35.00

Good Impressions £30.00

### Ink Cart/Ribbons

BJ-10/20 Ink Cartridge £16

BJ-300 Ink Cartridge £11

DJ-500 Bk Hi-Cap Cart. £21

DJ-500C/550C Colour Cart. £22

Swift24 Mono/Colour £5/£15

### Ordering by Telephone

Please specify the goods you require and for which computer. Please have your credit/debit card ready. We will require the cardholders name, address, delivery address if different and the expiry date of the card.

### Ordering by Post

Please specify the goods you require and for which computer in writing including your telephone number & delivery address. Send complete with a signed cheque/postal order or alternatively for credit/debit cards, the card number, cardholders name, address, and expiry date. IMPORTANT - Please write your name, address & credit card details in BLOCK CAPITALS to avoid confusion.

### Where to Find Us

From the M63 Junction 12 roundabout follow signs to Cheadle A560 passing the glass pyramid. At the 2nd set of traffic lights turn left onto Brinksway. Turn next left onto Chester St and immediately left again onto Ford St. Enter on-site car park via Red Gates on the right hand side.

### Terms

EC residents add 17.5%

VAT to all prices except

books. Carriage is free

(except books, paper &

large software applications)

on mainland UK, elsewhere

at cost. Only Credit/Debit

cards accepted for overseas

orders. Prices and

manufact's specifications

subject to change without

notification. Goods offered

subject to being unsold and/

or available. Goods not

offered on trial basis.

Restocking fee on non-

defective returns.

E & OE



# Desktop Projects Ltd

Authorised Acorn Dealer (Tel: 061-474 0778, Fax: 061-474 0781)

Unit 2A, Heanriding Business Park, Ford St, Stockport, Cheshire, SK3 0BT



## QuickShow

£25+VAT

### !QuickShow Video Titling &

Slide Show Presentation  
Has never been easier!

QuickShow is an easy to use slide show presentation and video titling package. It allows you to create a sequence of frames containing text of any colour with drop shadows, outline shadows and rubout boxes using outline fonts. Sprites can also be included in frames and positioned and resized as necessary. Once several screens have been created they can be linked together with the sequencer which allows you to fade each screen out and in with the many fades provided with the package. Completed sequences can be converted to stand alone applications which when run, automatically 'Shows' the sequence without using IQuickShow. 2Mb RAM required.

## Flopticals / CD-ROM Multimedia

**A3000/A5000/A300/A400 External Floptical** (without SCSI card) **£349**  
The above must be used with an Acorn compatible SCSI card. Reads 720k & 1.44Mb DOS format floppy discs.

**A5000 Internal Floptical kit** (with Econet SCSI card) **£359**

**Floptical floppies (20Mb)** **£20**

Each of the above systems comes complete with one floptical floppy.

**Cumana CD-ROM Multimedia Pack** **£699**

Comprises CD-ROM drive, SCSI card, stereo speakers, 6 RISCOS CD-ROM titles, The Hutchinson Encyclopedia, Dictionary of the Living World, Revelation 2, The Illustrated Holy Bible, The Illustrated Works of Shakespeare, Sherlock Holmes on a Disc, ICDPlayer, 3 caddies, etc.

**Cumana World of CD-ROM Multimedia Pack (Ring for details)** **£579**

**Cumana CD-ROM Software Pack** **£299**

As above without CD-ROM Drive and SCSI card

**Cumana CD-ROM Drive without SCSI Card (Sony Device)** **£429**

**Cumana CD-ROM Drive with SCSI Card (Sony Device)** **£549**

## Hard Discs

### IDE

The following are complete HardDisc Systems comprising of IDE disc controller, HardDisc, mounting brackets, cables, utilities disc and manual.

#### Archimedes Internal

Archimedes Internal hard discs.

Not suitable for A3k, A3010-A3020

40Mb 17ms £199

120Mb 16ms Cache £299

200Mb 13ms Cache £399

330Mb 12ms Cache £699

520Mb 12ms Cache £899

#### A5000 Exchange Drives

These systems are only available for the A5000 only.

120Mb 16ms Cache £200

200Mb 13ms Cache £300

#### A3000/Archi External

40Mb 17ms £279

120Mb 16ms Cache £379

200Mb 13ms Cache £479

330Mb 12ms Cache £779

520Mb 12ms Cache £979

#### A3000 Hard Cards

20Mb Internal+User Port £189

30Mb Internal+User Port £189

60Mb External+User Port £329

#### A3010 Hard Cards

20Mb Internal £199

**A3010 Ultimate Multi-Podule HD**

20Mb Internal £269

60Mb External £399



## SCSI

The following are complete SCSI HardDisc Systems comprising of a Morley SCSI interface, HardDisc, mounting brackets, cables, utilities disc and manual.

#### Archimedes Internal

Not suitable for A3k, A3010-A3020

105Mb 18ms Cache £429

180Mb 18ms Cache £599

330Mb 12ms Cache £899

520Mb 12ms Cache £999

#### A3000/A300/A400 External

105Mb 18ms Cache £509

180Mb 18ms Cache £699

330Mb 12ms Cache £979

520Mb 12ms Cache £1049

#### Removable Hard Discs

44Mb (Inc one cartridge) £499

44Mb Cartridge £55

88Mb (Inc one cartridge) £599

88Mb Cartridge £99

The above are external units with SCSI card.

#### SCSI Controller Cards

Morley Uncached £139

Morley Cached £179

## Archimedes, A3000, A5000 Software

### Applications

ABC Compiler (Oak)	£77	<b>MasterFile III (RISC Dev)</b>	<b>£49</b>
Ancestry (Minerva)	£59	Midnight Express (Mid. Graph.)	£39
ANSI C v.3 (Acorn)	£125	Mogul (Ace)	£20
Arc DFS (Dabs)	£22	Multi FS (Arxe Systems)	£27
ArcComm2 (Logotron)	£52	Multistore v2 (Minerva)	£219
ArcLight (Ace)	£40	Notate (Longman)	£54
ArcTerm 7 (Serial Port)	£62	Ovation (RISC Dev)	£95
Articulate (4D)	£20	PC Access (Minerva)	£29
Artlist (4D)	£20	PCB (Oak)	£29
Armadeus (Clares)	£59	PC Emulator (Acorn)	£95
Artisan 2 (Clares)	£43	<b>PenDown Plus (Longman)</b>	<b>£68</b>
<b>Art Works (CC)</b>	<b>£135</b>	Pin Point (Logotron)	£79
Atelier (Minerva)	£69	PipeDream 4 (Colton)	£179
AUN/Level 4 FileServer (Acorn)	£395	<b>Playback (RISC Dev)</b>	<b>£19</b>
Autosketch v2 (Autodesk)	£65	Poster (4Mation)	£75
Cable News (Lingenuity)	£165	Presenter 2 Hotlink (Lingenuity)	£33
CADet (Minerva)	£139	Presenter GTI (Ling)	£66
Chameleon 2 (4Mation)	£35	Printer JX, PJ, CA (ACE)	£13
Compression (CC)	£35	Pro Artisan (Clares)	£75
Control Panel (Lingenuity)	£14	Realtime Solids Modeller (Sil)	£99
Desktop Assembler (Acorn)	£125	Render Bender v2 (Clares)	£99
Desktop C (Acorn)	£185	Revelation II (Logotron)	£110
Desktop Office (Minerva)	£95	Rhapsody v2 (Clares)	£45
Desktop Publisher (Acorn)	£125	RISCBasic (Silicon)	£112
Desktop Thesaurus (RISC Dev)	£19	RISCType (CIS)	£16
<b>Digital Symphony (Oregon)</b>	<b>£40</b>	<b>Rhythm Bed (Clares)</b>	<b>£40</b>
Draw Print-Plot (Oak)	£39	<b>S-Base Personal (Longman)</b>	<b>£89</b>
Easiword 2 (Minerva)	£55	<b>S-Base Developer (Longman)</b>	<b>£175</b>
Easy Writer II (Icon Tech)	£126	<b>S-Base Developer + (Longman)</b>	<b>£275</b>
Einstein (Ace)	£106	Schema (Clares)	£96
Equator (CC)	£39	SigmaSheet (Minerva)	£38
Euclid 2 (Ace)	£55	ShapeFX (Datastore)	£9
<b>Eureka (Longman)</b>	<b>£99</b>	ShowPage (CC)	£130
First Word Plus v2 (Acorn)	£67	SmArt (4Mation)	£50
Font FX (DataStore)	£9	SmArtFilter (4Mation)	£32
Font Starter Pack (Acorn)	£35	Snippet (4Mation)	£26
Gammapiot (Minerva)	£36	Speech! (Superior)	£15
Genesis 2 (Oak Solutions)	£109	Splice (Ace)	£27
Graphbox v2 (Minerva)	£57	<b>Squirrel Database (Dig Serv)</b>	<b>£120</b>
Graphbox Pro (Minerva)	£109	<b>Squirrel 'C' Developers Toolkit</b>	<b>£99</b>
Hard Disc Companion II (RISC)	£45	Super-Dump (Silicon)	£29
Hearsay II (RISC Dev)	£70	Super-Plot (Silicon)	£28
Hotlink Presenter (Lingenuity)	£41	Titler (Clares)	£120
Home Accounts (Minerva)	£34	<b>Touch Type (IOTA)</b>	<b>£39</b>
Illustrationist (Clares)	£76	Tracker (Serial Port)	£37
<b>Imagery (Palette Studios)</b>	<b>£69</b>	<b>Turbo-Type (CIS)</b>	<b>£27</b>
<b>Impression v2 (CC)</b>	<b>£125</b>	Tween (Ace)	£20
Impression Junior (CC)	£75	TypeStudio (RISC Dev)	£43
Impression Bus Supp (CC)	£39	Vector (4Mation)	£75
Inter-Sheet II (CC)	£30	Vox Box (Clares)	£47
Inter-Word (CC)	£30	<b>WordWorks (CC)</b>	<b>£38</b>
Investigator v2 (Serial Port) (OS2)	£22	<b>Wordz (Colton)</b>	<b>£95</b>
Mailshot (Minerva)	£29	Worra CAD (Oak)	£83

### Games

2067BC (Oregon)	£17	Jet Fighter (Minerva)	£13
Aggressor (Atomic)	£18	Kerbang (Eterna)	£15
Air Supremacy (Superior)	£17	<b>Krisalis Collection</b>	<b>£22</b>
<b>Alderbaran (Evolution)</b>	<b>£25</b>	Includes, Mad Professor Mariarty,	
Alien Invasion (Dabs)	£14	Pipermania, Terramex & Revelation	
Alpied (Dabs)	£12	<b>Last Ninja (Superior)</b>	<b>£19</b>
Ballarena (Eterna)	£14	Legend of the Lost Temp (OS2)	£19
Bambuzle (Arxe Systems) (OS2)	£19	Lemmings (Krisalis)	£19
Battle Tank (Minerva)	£13	Loopz (Audiogenic)	£18
<b>Black Angel (4D)</b>	<b>£25</b>	<b>Lotus Turbo Challenge II (Kris)</b>	<b>£19</b>
Blaston (Eterna)	£15	Mah-Jong Patience (CIS)	£15
Blitz (Arxe Systems)	£17	Mah-Jong The Game (CIS)	£19
Blowpipe (Eclipse)	£15	Man United Europe (Krisalis)	£18
Bobby Blockhead (Atomic)	£18	Master Break (Superior)	£15
Boogie Buggy (4D)	£19	Micro Drive 2 (CIS)	£25
Break 147 & Superpool (4D)	£25	<b>Mig-29 Fulcrum (Domark)</b>	<b>£25</b>
Bug Hunt, MoonDash (Min)	£13	Missile Control (Minerva)	£14
Bug Hunt in Space (Minerva)	£13	Nebulus (Krisalis)	£19
Cartoon Line (Eterna)	£19	Nevryon (4D)	£15
Casino (Minerva)	£18	<b>Oh No More Lemmings (Kris)</b>	<b>£16</b>
Cataclysm (4D)	£19	<b>Om Sharif's Bridge (Krisalis)</b>	<b>£22</b>
Caverns (Minerva)	£14	Orion (Minerva)	£19
Chess 3D (Micro Power)	£19	Pandora's Box (4D) 2Mb	£14
Chocks Away 2 (4D)	£19	Pesky Muskrats (Coin-Age)	£19
Chocks Away Extra Miss(4D)	£15	<b>Play It Again Sam! (Superior)</b>	<b>£19</b>
Chocks 2 Compendium (4D) 2Mb	£28	Poizone (Eterna)	£14
Chopper Force (4D)	£22	<b>Populus (Krisalis)</b>	<b>£22</b>
Chuck Rock (Krisalis)	£19	Powerband (4D)	£19
Colony Rescue (Dabs)	£12	Quest for Gold (Krisalis)	£19
Conqueror (Superior)	£18	Repton 3 (Superior)	£15
<b>Cyber Chess (4D)</b>	<b>£39</b>	Repton 4 (Superior)	£18
<b>Cyborg (Alpine)</b>	<b>£19</b>	Rockfall (Eterna)	£16
Dreadnoughts (Turcan)	£25	Rotor (Arcana)	£19
<b>Dungeon (4D)</b>	<b>£25</b>	Real McCoy 2/3 (4D) (each) 2Mb	£24
Elite (Hybrid)	£32	Saloon Cars (4D)	£18
Enter the Realm (4D) 2Mb	£19	<b>Saloon Cars Deluxe (4D)</b>	<b>£25</b>
E-Type Compendium (4D)	£19	<b>Saloon Cars Del Extra Courses</b>	<b>£16</b>
Family Favourites (Min.) (OS2)	£15	<b>Sim City (Krisalis)</b>	<b>£22</b>
<b>Fervour (Clares)</b>	<b>£19</b>	<b>Spheres of Chaos (Matt Black)</b>	<b>£17</b>
Fire Ball 2 Xtra (CIS)	£12	Starch (Dabs Press)	£12
<b>Galactic Dan (4D)</b>	<b>£19</b>	Superior Golf (Superior)	£15
GODS (Krisalis)	£19	Sup Golf Extra Courses (Superior)	£14
Gribbly's Day Out (Coin-Age)	£19	SWIV (Krisalis)	£19
Grievous Bodily 'ARM (4D)	£19	ThunderMonk (Minerva)	£14
<b>Gulle (Dream)</b>	<b>£22</b>	<b>Titles (Brain Games)</b>	<b>£16</b>
<b>Heimdal (Krisalis)</b>	<b>£22</b>	Top Banana (HEX)	£19
<b>Hero Quest (Krisalis)</b>	<b>£22</b>	Tower Of Babel (Cygnus)	£18
HoverBot (Minerva) (OS2)	£13	Twin World (Cygnus)	£14
Holed Out Compendium (4D)	£19	Waterloo (Turcan)	£19
Ibix the Viking (Minerva) (OS2)	£14	X-FIRE (4D)	£14
Iron Lord (Cygnus)	£14	Zarch (Superior)	£15
Ixon (Software 42)	£19	<b>2Mb - RAM required for RISCOS3.1</b>	
James Pond (Krisalis)	£19	<b>OS2 - Runs on RISCOS2 only</b>	

### Education

Adv. Playground 5+ (Storm)	£17
Amazing Oille 4+ (Storm)	£14
Coffee 9+ (Storm)	£28
Concept Designer (Logotron)	£23
Converta-Key	£15
Crossword+ 8+	£19
Data Word (Triple R)	£15
Desktop Folio (ESM)	£89
Farmer Giles 2 (CTS)	£17
First Words & Pictures (Chk)	£26
Flight Path 9+ (Storm)	£28
Freddy Teddy (Topologia)	£19
Freddy Teddy's Adv (Topol.)	£17
Fun & Games 5-9	£18
Fun School 2 (Database)	£15
Fun School 3 (Database)	£18
<b>Fun School 4 (Database)</b>	<b>£18</b>
(Please spec. age group <5, 5-7, >7)	
Giant Killer (Topologia)	£17
Giant Killer Support (Top)	£14
History Costume Pk (Mic St)	£17
House of Numbers (Chalk)	£19
Hyperbook Reader (Logotron)	£48
Hyperbook Lib (Logotron)	£110
Junior Database (Iota)	£40
Letters and Pictures (Chalk)	£18
Logo (Logotron)	£60
Magpie (Logotron)	£45
Maps & Landsc. 1/2 (Chk) ea.	£19
Money Matters (Triple R)	£20
Numbers and Pictures (Chalk)	£18
Numerator (Logotron)	£60
Numerator Chaos (Logotron)	£19
Ollie Octopus Sketch Pad (Storm)	£14
Pendown (Logotron)	£50
Pendown Fonts (Logotron)	£17
Picture Book (Triple R)	£20
<b>Pin Point Junior (Logotron)</b>	<b>£23</b>
Pirate (Chalk)	£18
Prime Art (Minerva)	£69
Puncman 1-2,3-4,5-7 (Chalk) ea.	£18
Reversals (Chalk)	£18
Search & Rescue 9+	£28
Spellbook 4-9 (Soft Stuff (SS))	£19
Star (Logotron)	£16
Target Maths (Triple R)	£20
<b>10/10 Early Essentials &lt;7yr (3R)</b>	<b>£19</b>
<b>10/10 English (3R) 6-16yrs</b>	<b>£19</b>
<b>10/10 Maths (3R) 6-16yrs</b>	<b>£19</b>
Things to do with No's (SS)	£19
Things to do with Words (SS)	£19
Words and Pictures (Chalk)	£18
Please call for titles not listed	



## Desktop Projects Ltd

Please contact us if you are offered a better price elsewhere, we will do our best to match it. We operate the Acorn Teachers Scheme. This document was produced entirely on the Archimedes using Impression, ArtWorks, Draw & Paint.

Tel: 061-474 0778



# THE ColourCard

## FOR THE ARCHIMEDES

MORE RESOLUTION  
MORE COLOURS  
MORE SPEED  
LESS FLICKER



PERFECT PARROT PICTURE PREVIEW



A new graphics accelerator card for the Archimedes, the ColourCard brings a host of improvements to the video capabilities of any Archimedes A300\*, 400\*, 540 or 5000 series computer.

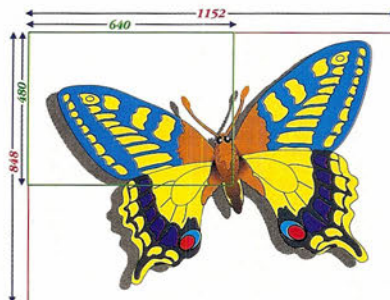
The simple to fit, single width expansion card is completely compatible with all RISC OS desktop software, but brings much higher screen resolutions at higher screen refresh rates (less flicker and easier on the eye).

In 16 and 256 colour screen modes all the colours are selectable from 16 million hues. This means scanned pictures can be seen with 256 true grey-levels on screen and that you are no longer restricted to the preset Acorn palette. Some applications, such as ArtWorks, can provide better screen colouring using the new palettes.

In addition, the ColourCard offers 15 bit-per-pixel true colour screen modes having over 32,000 colours on screen at once. Although these screen modes are not yet desktop software compatible, it is expected that programs will become available that take advantage of the modes. The ColourCard is supplied with a 24-bit preview utility to show 24-bit Clear files in stunning full colour.

The ColourCard reduces the load on the main Archimedes memory and so allows the ARM processor to run much faster than would normally be possible in high resolution screen modes. Depending on machine and screen mode, graphic operations can be up to twice as fast.

The ColourCard revolutionises DTP and graphics work, and opens up the world of true-colour graphics to the Archimedes user for the first time.



ColourCard offers 3 times the pixel area of standard Acorn VGA mode 27.

The ColourCard has been developed and is backed by the largest and most successful Archimedes developer. It is available now, and for added peace of mind comes with a 14-day, no quibble money back guarantee.

### KEY COLOURCARD FEATURES:

- Version 1.1 now supports 32,000 colour card screen modes
- Video pass through for guaranteed compatibility with all software without having to unplug your monitor
- 15 bpp (ie 32,000 colour) screen modes
- No quibble money back guarantee
- A3000 version now available
- New configurable screen update speed

(The ColourCard is compatible with all multi-scanning monitors. †Only higher scanning rate monitors can manage 1152 x 848 resolution. Lower scanning rate monitors may display some resolutions at lower refresh rates. \*A300 and early A400 computers may need an additional Genlock connector to be fitted internally.)

Price £249.00 +£6 p&p + vat (£299.62 inc)  
Available from all good dealers and from:



15 Witney Way, Bolden Business Park,  
Bolden Colliery, Tyne & Wear, NE35 9PE  
Tel: 091 519 1455 Fax: 091 510 1929



Computer Concepts Ltd  
Gaddesden Place, Hemel Hempstead,  
Herts, HP2 6EX  
Tel: 0442 63933 Fax: 0442 231632

E&EO Details are subject to change without notice.

SOME OF THE SUPPORTED SCREEN RESOLUTIONS		
16 colours	1600 x 600	65Hz
	1024 x 768	72Hz
	1152 x 848	64Hz <sup>†</sup>
	1280 x 512	80Hz
256 colours	800 x 600	85Hz
	1152 x 424	80Hz
32,000 colours	800 x 300	80Hz
	576 x 424	90Hz

# PROGRAMS

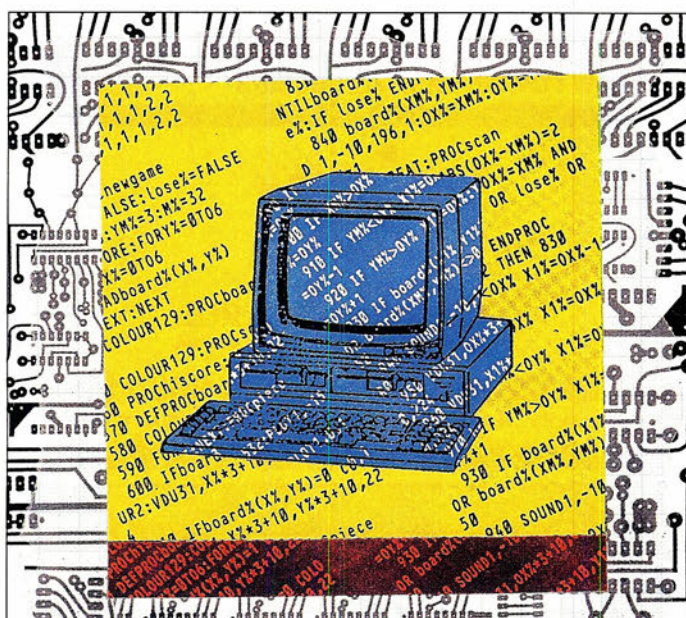
The section that is packed so full of exciting programs it makes sardines look positively comfortable

I don't know about you, but these new digital telephone exchanges give me the heebie-jeebies. I mean, with the old system, there used to be this nice pause after you'd finished dialling, during which you could recline into your 'long telephone call' chair, decide how you were going to greet the caller and basically collect your thoughts. Not so now: tone dialling is almost instantaneous, and my telephone manner has taken a total dive for the worse.

On the other hand, though, digital networks are handy. You can get your Access balance at the touch of a button, you can play tunes down the line and, thanks to the ever-growing zoological entity that is *Bio*, you can now dial direct from the desktop. *ToneDial* is a *Bio* module that allows your humble Archimedes to bleep and bloop along with the best of 'em: simply put your telephone mouthpiece to the speaker and witness a marvel of modern electronics.

For the more technically minded, *HexDump* is a must; it allows files to be dumped out in hexadecimal format, just like the output from the \*Dump command. For example, you can now take template files and incorporate them into Basic listings (as used in the *Why?* listing in \*INFO this month). Handy, eh?

This is the month our games designer really starts to buzz; that's the program I'm talking about, not the programmer. Now, you can place enemies on the game landscape, animate your sprites, describe how enemies move round the screen and, as if that wasn't enough, next month, we will publish a complete example



## CONTENTS

<b>*INFO</b>	69
Attractors, patches, dots, sorts, monkeys, sprites: the essential guide to life as we know it	
<b>BIO: TONEDIAL AND HEXDUMP</b>	79
Let your fingers do the beeping, and examine your files in hexadecimal with these <i>Bio</i> modules	
<b>MOVING TARGETS</b>	82
Animate your sprites, populate your landscapes, move aliens round the screen: the latest installment in our games design series has all this and more	
<b>ASSEMBLY LINE</b>	85
Implementing recursion using the stack techniques introduced over the last few months	
<b>YELLOW PAGES</b>	89
This month sees a new section at the start of the yellow pages that explains how to type in the trickier programs: isn't life wonderful!	

game created using the system. Eat your heart out, Repton, this is the biz.

Assembly Line tackles the dizzy world of recursion this month, with a pretty demon-

stration of how useful stacks are: a classic Persian carpet. At last, proof that sitting in a dark room slogging through stack theory has its rewards; not that you ever doubted it...

Talking of dark rooms, what better to gaze at in wonderment than \*INFO's quirky brand of graphics? Rumour has it that the only other way of seeing displays comparable to *Lorenzo* and *Ribbon* is to travel to Tibet and join a lamasery but, thanks to Jan Vlietinck, you can bring the effects of years of biochemically augmented meditation into your own home. Kind, caring, considerate; that's \*INFO for you.

Beeb owners can warp their minds with a simulation of typewriting monkeys. The theory that a monkey with a typewriter could eventually type the complete works of Shakespeare has been around for a long time, but what is not quite so well known is that this method is used every month to great effect. This very column is simply the result of combining a friendly chimpanzee called Bob and an A3010#%gfd 8[μøpμææ{

If I were you, I'd stick to the programs in \*INFO: they're cheaper and don't have a passionate craving for bananas.

You can now start to patch in to Acorn's operating system and change all those annoying niggles you love to hate. The patches presented this month allow you to design trendy icons for all your disc drives, as well as changing the colour of the Pinboard backdrop without gobbling up lots of memory.

Clever stuff indeed: all we need now is a patch to detect when you're feeling under the weather and play soothing music while you work. Couple that with automatic coffee making and I reckon this computing thing could take off...

Hmmm.

Mark Moxon

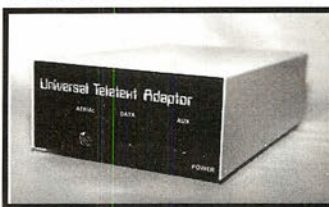
## TELETEXT ADAPTOR

- Works with most major Acorn computers including A5000
- Price includes manual, user notes, leads and software
- Can receive Satellite Teletext
- All but BBC and Master Types Multi-Task
- All metal case model with built-in power supply - Top quality unit
- Gives optional TV pictures and sound

NEW ADVANCED PACKAGE  
STANDARD SPEC. UNIT

£125 Inc P&P  
£94 Inc P&P

## ADD TELETEXT TO YOUR COMPUTER

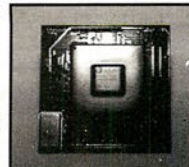


## ARM 3 PROCESSOR

AS BELOW EXCEPT  
**35MHZ**  
& OVER 17 MIPS

Trade in Available on  
GCEL STD. ARM 3

£212.77 RRP £263



## PLUG IN AND GO UPGRADES

INCLUDING COMPLETE FITTING INSTRUCTIONS - LARGE STOCKS AVAILABLE

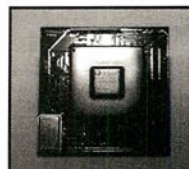
A5000	4 MEG	Gives 2 MEG machines 4 MEG of RAM	RRP £103	ONLY £76.00
A3000	2 MEG	Gives A3000 machines 2 MEG of RAM	RRP £36	ONLY £24.07
A3000	4 MEG	Gives A3000 machines 4 MEG of RAM	RRP £150	ONLY £77.67
A310	4 MEG	Gives A310 machines 4 MEG of RAM	RRP £248	ONLY £160.00
A310	4 MEG + ARM 3	2 Upgrades on easy to fit board	RRP £452	ONLY £300.00
A3010	2 MEG	Gives A3010 2 MEG of RAM	RRP £45	ONLY £32.00
A310/440	CARRIER	For RISC OS 3	RRP £28	ONLY £15.00
A310/440	MEMC1A	Upgrade	RRP £39	ONLY £32.00

ALL TOP QUALITY, LOW POWER, EASY FIT DESIGNS

## ARM 3 PROCESSOR

- RISC-OS Armspeed software
- Cache operation at 25 MHz
- 3-6 times speed increase
- Fits A300/400 series
- DIY plug in design

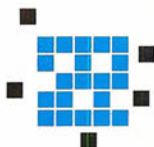
POA



### HOURS OF BUSINESS:

9.00 AM - 5.30 PM

(24 HOUR ORDERING FACILITY)



GROUND CONTROL  
ELECTRONICS LIMITED

PRICES EXCLUDE VAT,  
BUT INCLUDE CARRIAGE CHARGES  
(UK MAINLAND)  
PACKAGING AND INSURANCE  
Further Details on Request  
Dealer Enquiries Welcome  
Educational Discount Available

FOR FURTHER INFORMATION TELEPHONE: 0635 524008 OR 0622 833023

UNIT 7, KINGFISHER COURT, HAMBRIDGE ROAD, NEWBURY, BERKSHIRE RG14 5SJ.

### PREMIUM BULK 3.5" DISKS

	DS/DD	DS/HD
25	11.49	17.49
50	20.99	30.49
100	37.99	56.99
200	71.99	109.99
250	88.99	134.99
500	173.99	259.99

ALL DISKS ARE FULLY GUARANTEED  
AND ARE COMPLETE WITH LABELS

### 3.5" SUPERIOR LOCKABLE DISK BOXES

Qty	100 Cap.	140 Cap.	Bank Box
1	4.49ea	6.49ea	9.95ea
2	4.39ea	6.39ea	9.75ea
4	4.19ea	6.19ea	9.50ea
6	3.99ea	5.99ea	9.25ea

All products are subject to availability  
All prices include VAT.  
Please add £3.50 p+p  
for disks and boxes.  
E&OE.



**SNAP  
COMPUTER  
SUPPLIES LTD**

**HOTLINE**

**0703  
457111**

### 3.5" PREMIUM DISKS WITH OUR BOXES

	DS/DD	DS/HD
100 Cap. box + 50 disks	24.99	34.49
100 Cap. box + 100 disks	41.49	60.49
140 Cap. box + 100 disks	43.99	61.99
Bank box + 50 disks	29.99	39.49

### RIBBONS - POST FREE

Full Mark Brand	2 off	4 off
	PRICE EACH	
Citizen 120D/124D Swift 24	2.75	2.55
Citizen Swift 24 Colour	13.95*	
Panasonic KXP 1080/1123/1124	3.25	3.05
Star LC10/LC20	2.60	2.40
Star LC10-4 Colour	5.90	5.70
Star LC24-10	2.95	2.75
Star LC24-10 Colour	10.95*	
Star LC200	3.00	2.80
Star LC200 Colour	10.95*	
Star LC24-200	2.95	2.75
Star LC24-200 Colour	10.95*	
Ribbon re-ink	12.95	

Minimum order - 2 ribbons, except those  
marked with an asterisk \*

### COMPATIBLE INK JET REFILL

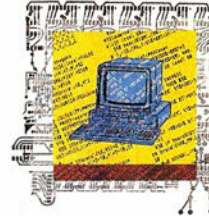
HP Deskjet 500 Double Refill	9.95
Canon BJ10E Double Refill	9.95



**SNAP COMPUTER SUPPLIES LTD Fax: 0703 457222**

Unit 16, The Sidings, Hound Rd, Netley Abbey, Southampton SO3 5QA





# \*INFO

Dave Lawrence and Dave Acton  
present their monthly mix of  
programs for all Acorn users



## FATAL ATTRACTION

**Programs:** Lorenzo, Ribbon

**Description:** 'Attractors'

**Author:** Jan Vlietinck

**Machine:** 32-bit

**Listings:** 165, 135 lines m/c

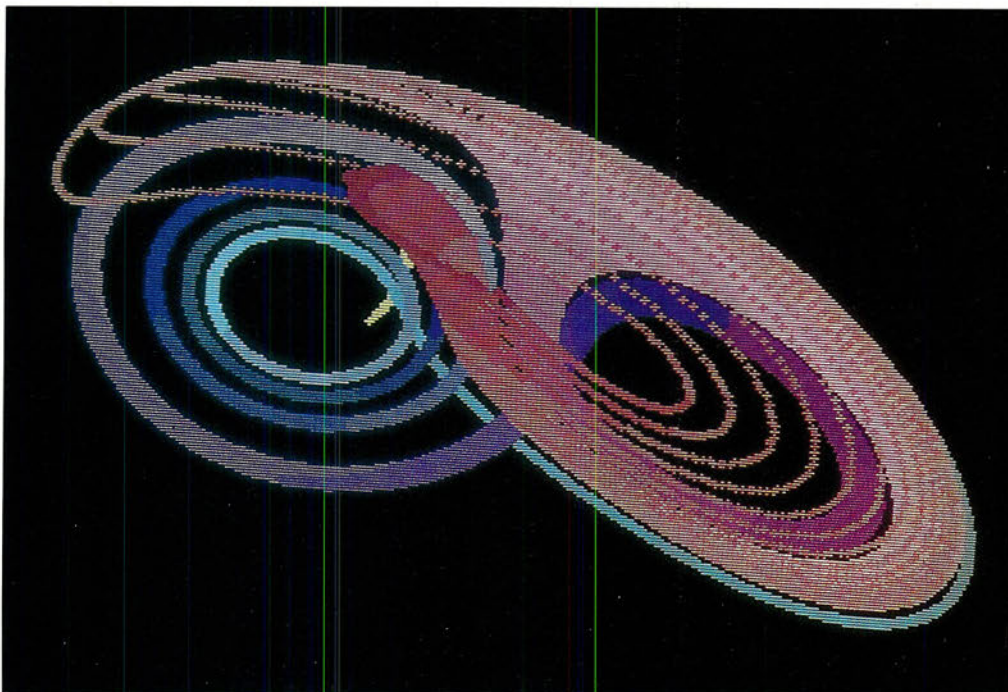
Regular **Jan Vlietinck** has come up with two new twists on the Lorenz attractor. This curious shape is created iteratively by following a point on an orbit around other points to which it is attracted. Jan says:

'A basic property of the Lorenz attractor is that two points with only a minor difference in initial values always lead to a different path after some iterations. *Lorenzo* iterates 300 points simultaneously, with the extended rule that each point is strongly attracted by the previous.

'This scheme leads to a play between the repelling property of the Lorenz attractor and the contraction of points by the extended rule. The result is a bit awkward at times. A colour table is used to enhance the palette. Clicking the mouse restarts with different values.

'*Ribbon* is also an attractor simulation. A point is moved by the attraction forces of three points. If the initial point is close to an attraction point and if its kinetic energy is small, then it stays captured by the attraction point.

'Otherwise it follows a chaotic path through the other attracting points. The same is observed with the gravitational forces of planets. The ribbon is created by drawing a horizontal line, with black pixels at the ends. To restart with other values click the mouse.'



Strangely attractive: Lorenzo zooms through its chaotic orbits...

## BOX OF PATCHES

**Programs:** RMSaveS, Patch-Pin, SaveSprs

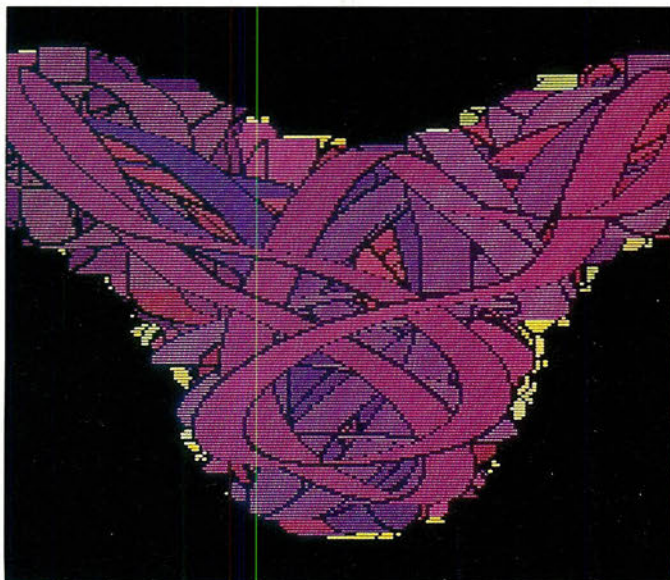
**Description:** Patching the operating system

**Machine:** 32-bit

**Listings:** 60, 100 lines machine code

Last month we looked at a couple of simple ways in which Risc OS can be 'patched' to make it a little prettier and easier to use. Continuing on this theme, but delving a little deeper, here are a couple more patches for all you hardened Arm nuts.

First, for people with more than one drive, we have a way to make your drive icons more distinct. Second, an extra para-



... while gravitational forces leave your screen in Ribbons

**New line! Quality Educational programs from Sherston Software**  
 Badger Trails - 9-11yrs ... £41.13  
 Splash - 7-11yrs ... £23.44  
 Viewpoints - 7-11yrs ... £46.94  
 Hiltop - 7-16yrs ... £52.88  
 Recall - 8-13yrs ... £46.94  
 Graph-It - 8-16yrs ... £23.44  
 Crystal Rain F - 10-12yrs ... £6.94  
 Splitan Image - 19.91  
 Food for Thought - 19.91  
**AND MORE!**  
 Full details available on request!

## Special Joystick Packs!



(Quickshot 3 Turbo/Python 1)

**Pack One** Joystick Interface V2.4 and 1 X Quickshot 3 Turbo £49.95  
**Pack Two** Joystick Interface V2.4 and 2 X Quickshot 3 Turbo £59.95  
**Pack Three** Joystick Interface V2.4 and 1 X Superpro Auto joystick £51.95  
**Pack Four** Joystick Interface V2.4 and 2 X Superpro Auto £61.95

Now A5000 compatible!



Superpro Auto

**Arventure 1 - The Romans**  
 Age range 10-12 yrs An archaeological expedition into Roman Times - £35.19  
**Arventure 2 - The Egyptians**  
 Age range 10-12 yrs An archaeological expedition into Egyptian Times - £35.19

## Joystick Interface Extension Cable

Brings the joystick interface from the rear of the machine to a more convenient position at the front or side for example  
 Approx 1m length - Only £9.95

**Spend over £35**  
 and you can have a stylish lockable disc storage box for only £5.00!

£5.00!



## This month's SPECIAL OFFER

### Amazing Educational Deal!

**4 for the price of 1**

**Let's Spell at the Shops**  
**Let's Spell at Home**  
**Let's Spell Out & About**  
**Spellbook** (Supplied in 1 box)

These programs are designed to teach children the shape of letters and some of the most commonly used words in everyday situations. They are designed for use by children from 4 to 9 and operate at different levels accordingly. They also incorporate sampled speech to improve interaction and help with the learning of letter sounds. The intention is that young children will use the "games" to become familiar with computer use, mouse manipulation and letter recognition. *Previously £25.50 each!*

**4 for £24.95!**

# Archimedes Software

## Arcade Games

SRP	Our Price
2067 BC	19.99 ... 17.95
Aldebaran	34.90 ... 32.50
Bobby Blockhead	19.95 ... 16.95
Black Angel	34.95 ... 32.50
Break 147 & Superpool	34.95 ... 32.50
Cyborg	25.95 ... 22.95
Chuck Rock	25.99 ... 25.99
Dungeon	34.95 ... 32.50
Elite	39.95 ... 39.95
Fervour	25.99 ... 21.95
Galactic Dan	25.95 ... 24.50
GODS	25.99 ... 25.99
Gribbly's Day Out	25.99 ... 21.95
Grievous Bodily 'ARM	25.95 ... 24.50
Guile	29.95 ... 25.95
Hero Quest	29.99 ... 29.99
Ixon	25.00 ... 21.95
James Pond	25.99 ... 25.99
Karma - The Flight Trainer	24.99 ... 21.95
Lemmings	25.99 ... 25.99
Loopz	24.99 ... 17.50
Oh No! More Lemmings	19.95 ... 19.95
Pesky Muskrats	25.99 ... 21.95
Populous	29.99 ... 29.99
Raw Power	25.00 ... 21.95
Ego/Repton 4	24.95 ... 21.95
Spheres of Chaos	24.99 ... 21.95
S.W.I.V.	25.95 ... 25.95
TECHNODREAM!	29.95 ... 26.95
The Last Ninja	24.95 ... 21.95
WolfPack	20.00 ... 16.95
<b>"Mind" Games</b>	
Chess 3D	24.95 ... 19.95
Cyber Chess	49.95 ... 46.95
Omar Sharif's Bridge	29.99 ... 29.99
<b>Simulation Games</b>	
Air Supremacy	24.95 ... 21.95
Chocks Away Compendium	39.95 ... 36.95

## Adventure Games

SRP	Our Price
Chopper Force	29.95 ... 26.95
Dreadnoughts	34.95 ... 31.95
Flight Simulator Toolkit	44.95 ... 41.95
Populous	29.99 ... 29.99
Saloon Cars Deluxe	34.95 ... 32.50
Saloon Cars Extra Crses	19.95 ... 17.95
Lotus Turbo Challenge 2	25.99 ... 25.99
Sim City (Due April)	34.95 ... 34.95
Waterloo	24.95 ... 21.95
<b>Adventure Games</b>	
Enter the Realm	25.95 ... 24.50
Pandora's Box	25.95 ... 24.50
<b>Sport Games</b>	
MicroDrive 2	34.95 ... 29.95
MicroDrive Designer	34.95 ... 29.95
Quest for Gold	25.99 ... 25.99
<b>Compendiums</b>	
Champions	29.99 ... 29.99
Krisalis Collection	29.99 ... 29.99
Play It Again Sam	24.95 ... 21.95
Real McCoy 2 or 3 (each)	29.95 ... 26.95

Many special offers on games new and old!  
 Details in our FREE catalogue!

## Leisure/Various

Desktop Tracker	69.00 ... 69.00
Digital Symphony	50.00 ... 46.95
Rhapsody 2	61.95 ... 51.95
Rhythm Bed	49.95 ... 44.95
Score Draw	61.95 ... 54.95
Touch-Type (Typing Tutor)	51.04 ... 45.95
<b>Utilities</b>	
Graph Box Professional	151.58 ... 129.95
Illusionist	99.95 ... 89.95
Investigator Rel 2	27.95 ... 27.95
PC Emulator V1.8	116.33 ... 116.33
Pipedream 4	230.30 ... 199.95
Render Bender 2	99.95 ... 89.95

## Word Processors

SRP	Our Price
Shape FX	11.75 ... 11.75
Desktop Thesaurus	22.33 ... 18.95
Easewriter	176.25 ... 159.95
Teichwriter	293.75 ... 249.95
<b>Spreadsheet</b>	
Eureka	139.83 ... 119.95
<b>Educational</b>	
10 out of 10 Maths	25.95 ... 24.95
10 out of 10 English	25.95 ... 24.95
An Eye for Spelling	41.13 ... 37.95
Ancient Greece	29.28 ... 26.95
Best Four Adventure Programs	44.06 ... 39.95
Best Four Maths Programs	52.88 ... 44.95
Best Four Language Programs	52.88 ... 44.95
Castle Life	82.19 ... 74.95
Castle of Dreams	25.99 ... 22.95
First Words & Pictures	25.85 ... 22.95
Freddy Teddy's Adventure	19.95 ... 17.95
Fun School 20-6/6-8/8+ yrs - each	20.99 ... 15.95
Fun School 30-5/5-7/7-11 yrs - each	24.99 ... 21.95
Fun School 40-5/5-7/7-11 yrs - each	24.99 ... 21.95

**Fun School 3 & 4 offer!**  
 Buy any two £37.95  
 Buy any three £57.95

House of Numbers (6-13yrs)	25.85 ... 21.95
Let's Spell Special Bundle Pack!	24.95
Linkword French	46.95 ... 41.95
Linkword German	46.95 ... 41.95
Linkword Spanish	46.95 ... 41.95
Little Red Riding Hood	17.95 ... 14.95
Letters & Pictures (6-8yrs)	23.50 ... 19.95
Mega Maths (A Level)	25.22 ... 21.50
Micro English (8yrs - GCSE)	25.22 ... 21.95
Micro French (8yrs - GCSE)	25.22 ... 21.95
Micro German (8yrs - GCSE)	25.22 ... 21.95

## Micro Maths (11yrs - GCSE)

SRP	Our Price
Primary Maths (3-12yrs)	25.22 ... 21.95
Puncman 1&2 (7-13+)	23.50 ... 19.95
Puncman 3&4 (8-14+)	23.50 ... 19.95
Puncman 5, 6, & 7 (8-15+)	23.50 ... 19.95
Reading Writing Course	25.22 ... 21.95
Shylock Gnomes	21.74 ... 18.50
Smudge the Spaniel	25.99 ... 22.95
Spelling Week By Wk (6-14)	25.85 ... 22.95
The Playground	35.19 ... 32.95
The Puddle & the Wardrobe	35.19 ... 29.95
TinyLogo/Tiny Draw (4-9yrs)	35.19 ... 29.95
TV Fun & Games	22.95 ... 18.95

**\*\* We now stock the Sherston Educational Software range - please 'phone for details \*\***

Full range of Educational software available!  
 Please ask for our FREE catalogue!

## Communications

Arcterm 7	79.95 ... 67.95
Hearsay 2	88.13 ... 79.35
<b>Desktop Publishing</b>	
Good Impression (Tutorial)	31.67 ... 28.50
First Impression (Tutorial)	35.19 ... 31.95
Impression 2	198.57 ... 145.95
Impression Junior	105.69 ... 81.95
Ovation	116.33 ... 91.95
Artworks	198.57 ... 179.95

## Peripherals & hardware

Joystick Intfce V2.4 (loading Edge)	39.95
Clares Micro Mouse	32.00 ... 27.50
Sound Samp. & Midi Card	93.99 ... 93.99

## All prices include VAT

Remember this when comparing prices!  
**\*\* Free carriage on a total order when you buy a Krisalis product! \*\***

**... and much more! Send for our FREE catalogue!**

## Printers

SP1900+	9 pin Dot Matrix	£121.95
Star LC-20	9 pin Dot Matrix	£144.95
Star LC-100	9 pin Colour	£169.95
Star LC24-20	24 pin Dot Matrix	£199.95
Star LC24-200	24 pin Colour	£259.95
Selkosta SL-95	24 pin Colour	£249.95

Prices include VAT, Carriage & Cable

## Dust Covers

KX-P1081	£5.55
KX-P1180	£5.55
A3000 K'bd	£5.55
A3000 K'bd & Monitor	£12.25
One piece	£12.50
300/400 series	£12.25
K'bd & Monitor	£12.25

## The Leading Edge Range

**A3010 1mb Upgrade**  
**Only ..**

**£41.13 Inc**



**The Games Wizard**  
**only £25.99**

The Games Wizard is a MUST for all dedicated games players, allowing the user to EASILY add extra lives, find passwords, activate cheat modes and save a game in progress at any point, so that it can be continued later. Unlike similar devices on other machine formats, the Games Wizard is totally software based, making it a low cost, essential tool, that does not waste valuable expansion slots.

## A3010 "Joymaster"

Enables the built-in joystick ports on the new A3010 to be used with games not specifically written to support the Joystick Standard!

**Only £29.99!**

## Software Bargains & Mercury Games

Dept AU43, C/O Northwood House, North Street, LEEDS LS7 2AA  
 TEL: 0532 436300 FAX: 0532 423289

\* Access/Visa Welcome  
 \* Please add 95p P&P (Europe £2.50, Outside Europe £4.50)  
 \* All prices include VAT @ 17.5%  
 \* Goods despatched within 48 hrs, (subject to availability)  
 \* Free carriage on printers applies to UK mainland only Monday - Friday - excluding Scottish Highlands.

\* Educational discount of 30% off SRP (not Sale price) available on most Archimedes software; Official Order No. or school headed notepaper required - minimum order value £30.00 for invoicing, otherwise cheque with order. Please call to confirm your order.  
 (Prices are correct at the time of going to press, E&OE)

## BBC, Electron and Compact software!

All the Play It Again Sam compilations from £6.95 each; many other games, and educational software!  
 Send for our catalogue

**Parents! Teachers! and Pupils!**  
**BBC B Computers**  
**Only £176.25 Inc**  
 Or £229.95 with 40/80t drive  
 Also includes View and Speech ROMs!

**Please send me your FREE CATALOGUE!**

Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 Postcode \_\_\_\_\_

☐ Archimedes A3000V A5000 ☐ BBC B/B+/Master 128/ Master Cpt ☐ Electron

**\* Fast Delivery!**  
**\* Friendly Service!**  
**\* Competitive Prices!**  
**\* FREE quarterly catalogue, with product descriptions, review comments and Special offers!**

meter to Risc OS 3.1's Pin-board module that allows you to change the colour of the desktop backdrop.

Before proceeding with these patches, you will need the services of the command *\*RMSave*. This saves a module from RMA to disc. A quick entry of *\*Help* will, of course, reveal that there is no such command, but in true *Blue Peter* style, here's one we prepared earlier (as listing RMSaveS). When run, this will assemble the necessary code and save it as *RMSave* in your library. Using the command is very easy; just type...

*\*RMSave <module> <file>*

... where module is the name of the module you wish to save and file is the name under which you wish to save the module. You can miss this name off if you wish, in which case the module name will be used as a filename (truncated to 10 characters).

We cannot guarantee that this command works as it relies on an assumption about the way RMA is allocated. As far as we can tell each module installed is preceded by its length (one 32-bit word).

Using *OS\_Module 18* (describe module) on the module name supplied, we can find the address of the module in memory, *RMSave* simply saves a block of memory starting at this address of length block!-4. *OS\_File 10* is used with *R2* set to *&FFA* to stamp the saved file as a module.

## FILER FIXER

Enough introduction; on with the patches. If your system has only one floppy and/or one hard drive, it is quite easy to distinguish the icons on the left of the icon bar.

As soon as you add any more the only distinction is the rather forlorn ':1' or ':5' under



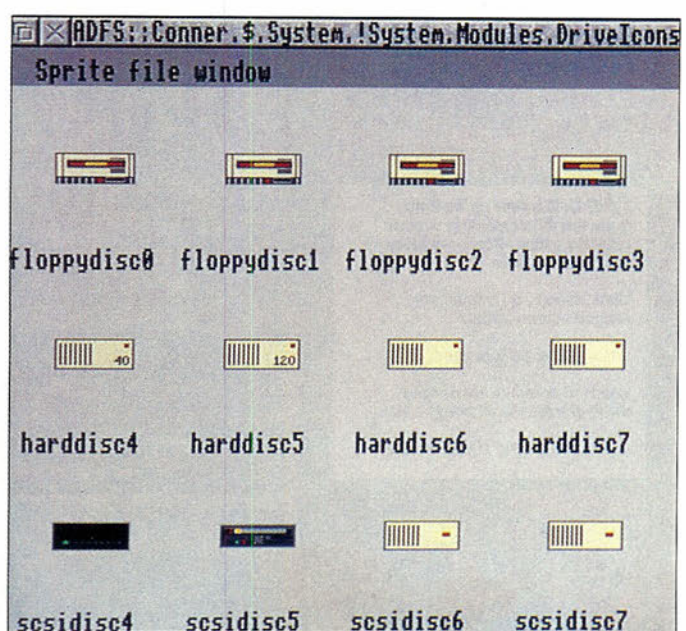
the icon. Under Risc OS 3.1, things are slightly better, as it does at least name your hard drives for you. As your system grows, you may add more drives, and even another filing system; IDE or SCSI. You're then faced with a bank of identical cream icons; it soon becomes very annoying clicking on the wrong icon.

Despite the ability to alter every icon that Risc OS uses, it is not possible to change the icon for an individual drive; icon 'floppydisc' is used for all floppy drives and 'harddisc' is used for all hard drives, ADFS and SCSI alike. We at *\*INFO* thought this rather short sighted of Acorn, so we set about finding a way round the problem...

The desktop drive icons are provided by the relevant filer module, *ADFSfiler* for ADFS and so on. If you *\*RMSave* *ADFSfiler* somewhere temporarily, load it into *Edit* (in Risc OS 2 you have to drag it onto the Edit icon, while in Risc OS 3.1 you can SHIFT-double-click it) then search for the string 'Sfloppydisc' (by pressing F4) you should find yourself with a display similar to that shown below.

Different OS versions will look slightly different, so don't worry if yours does not look exactly like this. If you look carefully, you should see four 'Sfloppydisc's (followed by :0 to :3) and then either two or four 'Sharddisc's (followed by :4 to :5 or :7 depending on your OS). These are the icon data blocks for the drive icons.

At this point you must be very careful. Put *Edit* into overwrite mode (using the Misc menu or SHIFT-F1), and position the caret after the first



... and the sprites for it

'Sfloppydisc' (in between the c and the first [00]) and press 0 (that's zero, not the letter O).

Because you're in overwrite mode this should replace the [00] with a 0. Move the caret to the end of the next 'Sfloppydisc' and press 1. Continue in the same way with 2 and 3, then move the 'Sharddisc' blocks and enter 4 and 5 (and maybe 6 and 7).

Save your edited file as *ADFSfiler2*, and as a precaution count the length of both files (from the filer or *\*Count* command) to ensure they are the same length. If they are not, you've made a mistake and should start again from the unaltered *ADFSfiler* file.

If you have SCSI devices, you should follow a similar procedure with the *SCSIfiler* module. Once again search for the string 'Sharddisc', but this time replace the whole name with 'Scsidisc0', ... 1, ... 2 and ... 3. Save this as *SCSIfiler2* and check the length against the original module. If all is well you are ready to proceed.

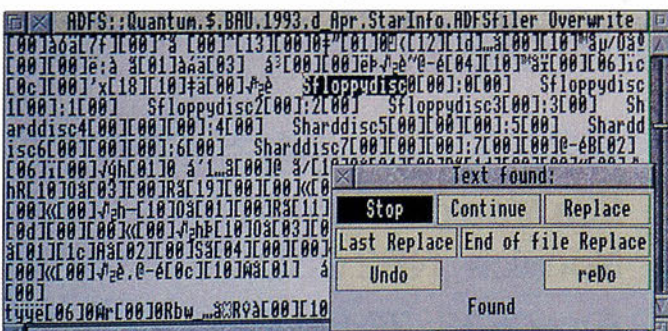
You now need to create some sprites. You may well already have a redesigned set of icons, in which case dig it out and copy the icons floppydisc and harddisc into another file. If not, Risc OS 3.1 users can find these icons in the sprite files within *!SetIcons*.

If you are still iconless, you should save out the Rom sprites using the listing *SaveSprs*. Whichever route you take, once you have these icons, rename floppydisc as floppydisc0 then copy it three times with suffixes of 1, 2 and 3. Also harddisc should be renamed as harddisc4 and copied as 5 (and maybe 6, 7).

At this stage you are free to edit the new sprites as much as you like. The icon bar above shows one of our A5000s with two IDE drives (Conner and Quantum) which simply have their sizes 'written' on them. LooseEnds and Imprimis are SCSI devices; a SyQuest removable and a definitely non-removable 640Mb.

The shot above shows the sprite file for this machine. This sprite file should then be saved somewhere sensible that your boot-up system can get to. You might put it in your *!System* directory, or maybe your boot sequence.

There is one more stage left, and that is installing the new modules. They must be *RMLoaded* and the new sprites 'seen' before your boot sequence gets anywhere near the desktop. Our machines are configured to boot into Basic, but run a boot file. This loads the two modules and *IconSprites* the new sprite file before entering the desktop with a



Editing ADFSfiler's icons

The Ultimate Arcade Puzzle  
Game is here!



F.R.E.D. is a new game from Software 42, combining superb platform action with some tricky puzzles. Features:

Ultra smooth, 50 frames per second screen update

Laser guidance mayhem!

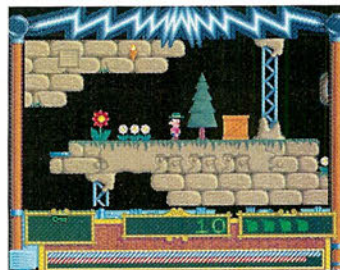
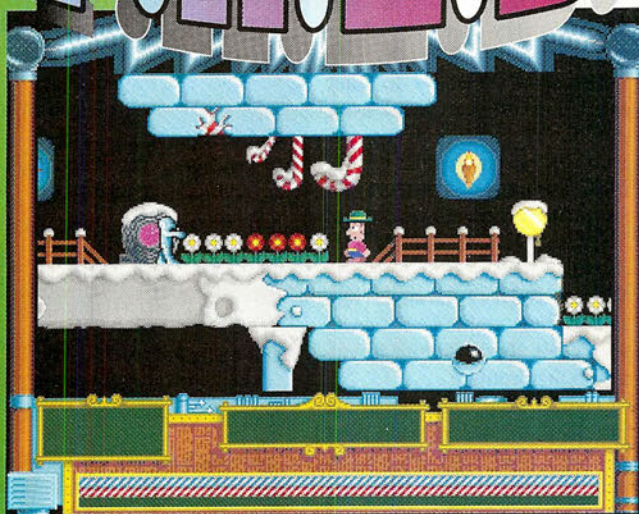
Loads of complex levels set in three graphically stunning zones

Digitally captured sound effects



Also available:  
Cycloids!

# F.R.E.D.



Price List:

F.R.E.D.	£20
Cycloids	£25
Raw Power	£25
Wolfpack	£20
Ixion	£25
Landbuild	£15
Label Print	£15
Clip Art 1-3	£8.50 each
ArcFS 2.10	£20
ArcFS 2 Upgrade	£12
(send original ArcFS disc)	

Please make all cheques payable to  
"Software 42",  
all prices are fully inclusive.

Come and  
see us at:

The BBC  
Acorn  
User  
Show



Software 42

109 Ferry Road

Hullbridge

Essex

SS5 6EL

## Archimedes Hints & Tips Compendium

Over 1,100 Hints and Tips about various aspects of using  
the complete Archimedes range of computers.

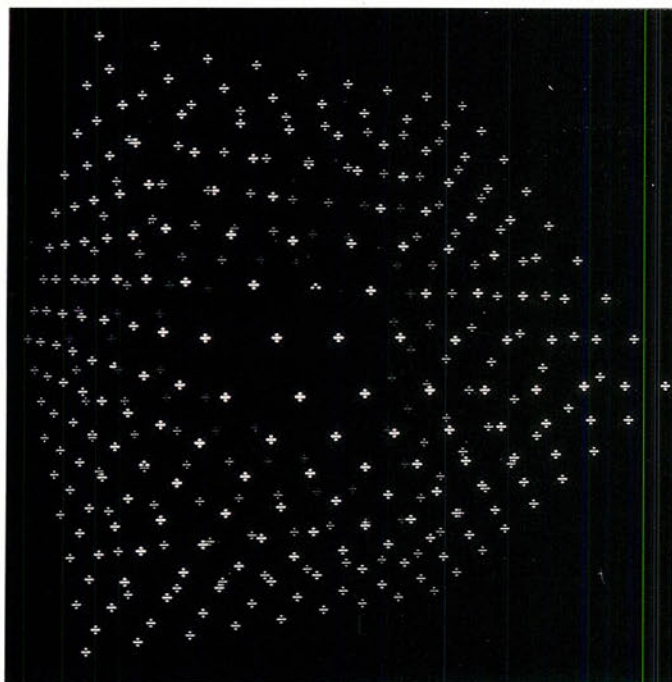
Printed text plus over 180,000 words on disc for ease and  
speed of reference. (!Edit format on 2 x 800Kb discs)

**Price: £29 inclusive**

Send a cheque for £29 to:

Norwich Computer Services  
96a Vauxhall Street  
Norwich NR2 2SD

Phone 0603-766592 Fax 0603-764011



The latest in \*INFO's tradition of dotty ideas

\*Desktop command. Do things in the wrong order, and you'll run into trouble and temporarily lose your filer icons.

## BACKGROUND TASK

The Pinboard in RISC OS 3.1 allows you to replace the rather dull grey desktop with a sprite. This can be scaled so that it fits the whole screen, tiled to cover it or dropped slap in the middle. Unless you have a sprite that already fills the screen or one that does not mind a grey border, centring is not particularly useful.

Changing this border would be very handy. If you don't like the idea of a sprite, but merely want to change the colour of the desktop, the only way to do it is to create a sprite in the colour you want and then make it into a backdrop.

This is hardly a justifiable method, as scaling a single pixel sprite uses 256K (in Mode 31). You could use just 32K by tiling it, but, well, er, things... do... go... a... little... s... l... o... w... ..l... ..y. As it stands, there is no way to change the desktop from its mid-grey to any other colour. So it looks as if we need a patch.

This patch is a lot easier to use than the previous one. You will need to \*RMSave Pinboard first, but after that it is a simple matter of running the program *PatchPin*. This performs the necessary and saves

the new module as *NewPin*. The patch adds an optional extra parameter to the \*Backdrop command: -Background. It should be followed by a Wimp colour number between 0 and 15 (0 is white and so on). If you want a black backdrop you would type \*Backdrop -B 7.

For a sprite centred on a dark blue background, \*Backdrop -C -B 8 <sprite> would do. Unfortunately it is not possible to set the colour from the Pinboard menu; you have to use the command line.

Acorn has developed one of the most versatile operating systems around at the moment, it just seems very strange that despite printer drivers, outline font managers, device filing systems and so on, the colour of the desktop is fixed, in Rom, in two separate places.

We hope that we at \*INFO will pass on more useful little patches to overcome these slight oddities.

## SMALL BUT PERFECT

**Programs:** 3DGraph/1,

Newton/1

**Author:** Alistair Brown

**Description:** Graphical one-liners

**Machine:** All

**Listings:** 2x1 line

One more we foray into the miniature world of one-liners. This month's offerings come from **Alistair Brown**. First, a

program he originally wrote on his Casio calculator; *3DGraph*. This will run on eight- and 32-bit machines in any mode, so if you have a multiscan monitor you might like to try it in mode 18 or even 29 if you have RISC OS 3.1.

Second, an old *Acorn User* favourite, the Newton Raphson curve. As it stands, this program will run on all machines in Mode 1. 32-bit users might like to change it to Mode 8; if you do, change the 'x' step to 1/256). Multiscan users could use Mode 19 by changing the 'y' step as well.

## DOTS BEFORE THE EYES

**Program:** Dots

**Description:** 3D graphics demo

**Author:** Tim Jones

**Machine:** 32-bit

**Listing:** 430 lines m/c, Basic

This is a simple but remarkably effective 3D demo from 16-year old **Tim Jones** of Aldershot who brought us *Ripples* a couple of months back.

Several shapes are defined as being made up of a set of dots and plotted using some fast machine-code. Depth-cueing (making distant objects fainter and nearer ones brighter) is employed and may be the reason why the spinning shapes seem so three-dimensional.

You can move the mouse to alter the spin, press the right mouse button to cycle through the available shapes and the left to select the dot design. Middle button exits.

The up and down cursor keys can be used to zoom in and out, and the left and right keys alter the 'focal length', increasing or decreasing the 'wildness' of the perspective.

New shapes are created by adding another definition in *FNshape()* and altering shapes to the number of the last shape defined. Use *PROCdot(x,y,z)* to add a dot. Each component dot must have co-ordinates in the range -100 to 100.

## SWIFT SORTING

**Programs:** IntSort, FracSort

**Description:** Fast Basic sorting demos

**Author:** Albert Hoekstra

**Machine:** 32-bit

**Listings:** 45, 80 lines Basic

It's not often we get a new angle on the age-old problem of sorting numbers, but **Albert Hoekstra** of the Netherlands has sent two short and neat Basic listings that do just that.

Both *IntSort* and *FracSort* make use of frequency distributions to do their sorting. *IntSort* sorts only integers. Enter the number of items to sort and an array is filled with random values between one and 100. Then the program simply counts up how many of each number there are and refills the array with the appropriate number of each.

Obviously, the greater the range of numbers, the more memory is required since the frequency array needs to have one element for each possible value. But for sorting arrays where the possible values are

## TOP TIPS

A couple of shorties from occasional \*INFO contributor Nick Craig-Wood.

● Firstly, for RISC OS 3.1 users, a clever macro setting for system

variables, by typing the following:

```
SetMacro Alias$SetCurrent Set %0 <FileSwitch$Current
FilingSystem>:!<FileSwitch$<FileSwitch$CurrentFiling
System>$%%1>
```

You can then use the 'new' command *SetCurrent* to set a further system variable to the current directory, the previous directory or the current library:

Usage: *SetCurrent SystemVariable <CSDLIB|PSD>*

EG: *SetCurrent Current\$Dir CSD*

Will set <Current\$Dir> to the current directory.

● Also from Nick, some advice for A5000 owners with Computer Concepts' dongles. You may have found that you have difficulties in printing from Basic (after a VDU 2 or CTRL-B). It seems likely that the *Impression* and *ArtWorks* dongles are not initialised into any useful state when the A5000 is started up, so printing goes a bit awry. Starting up *Impression* 'kicks' the dongles, resets them and printing works fine. A bit of a crude solution; can anyone provide a 'dongle kicker' utility?



# Over 500 Fonts for Over 50 Languages

Afrikaans,  
Albanian,  
Assamese, Bengali,  
Bihiri, Braille,  
Bulgarian,  
Byelorussian,  
Croatian, Czech,  
Danish,  
Devanagari, Dutch,  
English, Esperanto,  
Estonian, Faroese,  
Finnish, French,  
Gaelician, German,  
Greek (Ancient),  
Greek (Modern),  
Greenlandic,  
Gujarati,  
Gurumukhi,  
Hebrew (Ancient),  
Hebrew (Modern),  
Hindi, Hungarian,  
Icelandic, Irish,  
Italian, Lappish,  
Latvian, Lithuanian,  
Macedonian,  
Maltese, Marathi,  
Nepali, Norwegian,  
Polish, Portuguese,  
Punjabi, Rumanian,  
Russian, Sanskrit,  
Serbian, Slovak,  
Slovene, Spanish,  
Swedish, Tamil,  
Turkish, Ukranian,  
Vietnamese and  
Welsh.

Font Name	No of Fonts		RiscOS2	Risc OS3
<b>Cyrillic Fonts</b>				
EFF Times	4	АБВДЛЕЖЗИЙКЛМНОПРСУ	£38.50	£55.00
Swiss	4	АБВДДЕЖЗИЙКЛМНОПРСУ	£38.50	£55.00
<b>Educational Fonts</b>				
Primary	2	A Font in Regular and Bold	£20.00	£20.00
Primary Cheynes	2	Like Primary but with "hooks"	£20.00	£20.00
Sassoon Primary	2	Another new EFF Educational Font	£25.00	£25.00
Sassoon Infant	2	Learn quicker with Sasson Infant	£25.00	£25.00
<b>Greek Fonts</b>				
EFF Times (Ancient)	2	ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡ'ΣΤΥΦΧΨΩ	£38.50	£55.00
EFF Times (Modern)	4	ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡ'ΣΤΥΦΧΨΩ	£38.50	£55.00
Swiss	2	ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡ'ΣΤΥΦΧΨΩ	£28.00	£40.00
Royal	2	ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡ'ΣΤΥΦΧΨΩ	£28.00	£40.00
<b>Hebrew Fonts</b>				
Swiss (Modern)	1	אבגדהוזחטיךכלםמןנסעףפץצקרשת	£14.00	£20.00
Royal (Ancient)	1	אָבְּגִידֵהזֶזֶטַח טוּזְכּלמנפעץקרששת	£24.50	£35.00
<b>Indic Fonts</b>				
Bengali	6	অবচডদেগহজিকলমণাপরসটুতয়ষ	£160.00	£160.00
Devanagari Regular	6	अबचडेदगहजिकलमणीपॅरसटुवतक्षयरू	£160.00	£160.00
Devanagari Title	6	अबचडेदगहजिकलमणीपॅरसटुवतक्षयरू	£160.00	£160.00
Gujarati	6	અબચડેદગહજિકલમણીપૅરસટુવતક્ષયરૂ	£160.00	£160.00
Punjabi	6	ਅਬਛਡਏਗਹਜਿਕਲਮਣੀਪੌਰਸਟੁਵਤਖ਼ਯਰੂ	£160.00	£160.00
Tamil Black	4	ஈணசதிஙளுனாஜகலம	£120.00	£120.00
Tamil Light	2	ஈணசதிஙளுனாஜகலம	£90.00	£90.00
<b>Professional Fonts</b>				
EFF Times Phonetic	2	ßçetceddöðđdzfiyřkžxwlmōšRM	£58.00	£58.00
London A Expert Set1	4	ffiffiiiiiABCDEFfGH <sup>0131/83/5/87/8AAÄÅ</sup>	£27.00	£40.00
London A Expert Set2	2	ffiffiiiiiABCDEFfGH <sup>0131/83/5/87/8AAÄÅ</sup>	£17.50	£25.00

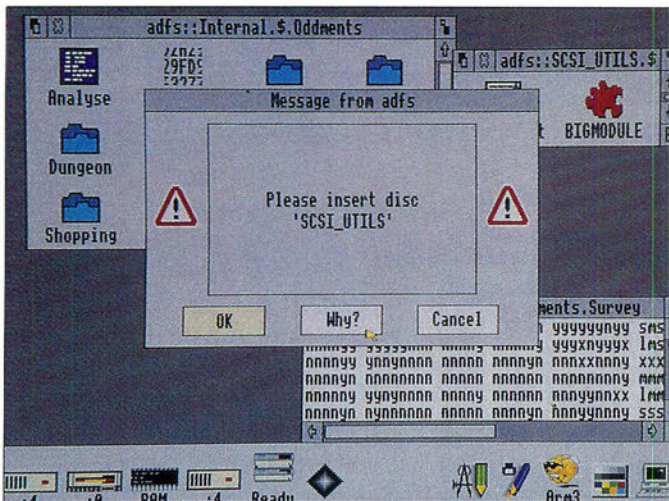
### How to order from EFF

All prices exclude postage and packing and VAT. Add up the cost of your order add P&P and then add VAT at 17.5%. P&P for Fonts is £2.50.

Either phone your order in to us, or send it by post. Most orders are dispatched within 1 working day.

Handling Charge  
on official orders  
under £30.00  
requiring an  
invoice £5.00.

**The above is only a tiny sample of the vast range of EFF Fonts, why not contact us now to receive a copy of our price list and Type Overview**



Filer error box output with Patrick Jacolé's module installed

within a narrow range, the method works very well.

*FracSort* uses the same principle and has been extended to cope with negative numbers. The minimum and maximum values are found, and the minimum subtracted from each input value (so all are positive). Then a cumulative frequency table is built up for the integral part of the numbers. For example, there might be one number less than one, three less than two, seven less than three and so on.

Then the numbers are sorted. If the integral part of a number is unique, then the value can be inserted directly into its final resting place since we know how many other numbers there are lower than that value.

If several numbers share the same integral part, they must be inserted as appropriate. So, the sorting technique is ideal when there is a small enough range for the frequency array to fit comfortably in memory, but where there aren't too many numbers sharing the same integer part.

## AUTO+

**Program:** !Auto (!RunImage, AutoDat)

**Description:** Update to desktop utility

**Author:** Colin Turner

**Machine:** 32-bit

**Listings:** 95, 120 lines Basic

From **Colin Turner** comes a useful update to Andrew Young's *Auto* application from the October 1992 **\*INFO**.

As you may recall, the original application allowed the instant setup of personal desk-

top environments. Double-clicking on the *Auto* application while holding down a key set up the desktop according to a file with the name of that key, stored within the *Auto* directory (for example, 'W' for wordprocessing, 'A' for accounts).

These files are simply composed of text and they contain keywords (these are case-dependent) to open directory viewers, install modules and so on. The table below lists the *Auto* keywords.

Colin's update defines a new filetype, called SignPost. This has been given the user filetype number &030, although you can easily change this (in the *!Sprites* and *!Run* files) to suit your own needs. Providing *!Auto* has been seen, double-clicking on any signpost file will cause it to be interpreted just like one

## AUTO KEYS

- {Open} precedes one or more directory viewers to open
- {Close} precedes one or more directory viewers to close
- {Vdu} precedes a series of VDU codes. These must be integers separated by commas and may not include ; or I
- {Module} precedes one or more modules to load
- {Application} precedes one or more applications to load
- {Mode} precedes the desired screen mode number
- {Pin} precedes the parameters for a \*Pin command (filename, X and Y co-ordinates)

Note: with {Open} and {Close} full pathnames should be given.

of the single-letter files from the original version. So simply create a text file with the appropriate commands, save it and change the filetype to SignPost (or &030). Double-click on the file to try it out. You can of course still use *Auto* with keys.

Colin has also added the extra keyword {Pin} which allows items to be added to the Risc OS 3.1 Pinboard. Since the application is quite short, we've simply republished the main program with updates. Create a directory, *!Auto*, and save *!RunImage* therein. Then enter the directory and run *AutoDat* to create the boot, run and sprite files.

## INFINITE MONKEYS

**Programs:** Monkey1, Monkey2

**Description:** Generates nonsense!

**Authors:** Richard Talbot-Watkins and Matthew Godbolt

**Machine:** Eight-bit only

**Listings:** 200 lines machine code, 90 lines Basic

This program simulates the infinite monkeys tapping away at their infinity of typewriters, in the hope of recreating all of Shakespeare's works.

Maybe that's bending the truth a little, but this program does try intelligently to create reasonable English text, resulting in often nonsensical, but sometimes very funny or downright bizarre sentences. The idea for this is from Dave Lawrence's *Archimedes Wurdz* program in the January 1990 issue.

To use it, there are two listings to type in; save these as *Monkey1* and *Monkey2* respectively, and then CHAIN 'Monkey1' to start. All the program needs to get running is the filename of a text file, which must be a pure Ascii text file no longer than 29K, with no control codes, terminated with a RETURN (&0D) character immediately after the last word or punctuation mark. Finally no trailing spaces are allowed.

Once it has a filename, the program chugs away at the disc, extracting each word from the file. It then checks to see if it has encountered the word before. If not, it adds it to a massive table that starts at

PAGE + &A00 (Master owners can therefore use longer text files), and allocates it a unique number. If it knows the word, it finds the number that was previously allocated to it. This number is remembered by the program. When the second word is fetched, the same procedure takes place.

Then, the 'word number' of the second word is stored in a list of data associated with the first word, simply to indicate: word 2 can follow word 1. This continues to the end of the file, until the computer knows exactly which words can follow which. Armed with this information, the computer starts at the first word from the file, which is printed. It then chooses a word at random which it knows can follow this, and this is also printed. This continues until it reaches a full stop; then a new sentence begins.

The program continues to churn out its strange ramblings until you press ESCAPE. Shorter text files work best, but whatever is input, a few smiles are bound to arise from its proclamations!

## LISTEN TO REASON

**Program:** Why?

**Description:** Mostly useful

**Author:** Patrick Jacolé

**Machine:** 32-bit

Have you ever been idly tapping away at your computer only to be prompted to 'Please insert disc '14\_09\_Tue' for no readily apparent reason?

This is only mildly annoying, as it is simply a matter of rooting around your desk to find the aforementioned disc. What would be really interesting would be to find out why it needs the disc and what it intends to do with it once it has got it.

We've recently received a piece of code that provides exactly this information. **Patrick Jacolé** has sent us a module, *Why?*, that patches into the operating system and displays an extra Why? icon on all filer error boxes.

Clicking on this will provide you with all the information you might require. You can then work out if it is worth trying to find the relevant disc or merely cancelling the request completely.



Unretouched Screen Mode 21 Image

## A fully featured Crossword Game for Europe

- \* Risc OS & Risc OS Style compliant
- \* Multi tasks under the WIMP manager
- \* Interacts with the Help application
- \* Includes 20 boards in 5 languages
- \* Boards for different levels of ability
- \* Skills taught: strategy, vocabulary, spelling
- \* New! Discs covering German and French GCSE Syllabus Vocabulary
- \* New! Site licence is now available

\* 50 page manual + 3 1/2" disc

Obtainable from Brain Games, P.O. Box 14, Hessle, N. Humberside, HU13 9YY Telephone 0482 649288

**RETAIL  
PRICE  
£19.75**

**Contex  
Computing**



Established  
1983

### BANK MANAGER

Complete and versatile personal accounts program. Consistently acclaimed!  
*'data entry is a delight...professional...excellent product'*  
*'Impressed...ideal...easy to use'*

Enter cheques and receipts. Automatic date sequencing. Reconcile statements. Search, amend and delete. Analyze expenditure. Forward cash flow forecast. Budgets. Up to 36 bank accounts online, inter account transfers, 9999 standing orders, 99 analysis headings, unlimited postings (depending upon disk space). Reports to screen or printer. Mix foreign currencies, graphics, password, file recovery, field editing, programmable reports, Arc RAM disks, wild card analysis enquiries, sort and more.

**Bank Manager £25.00**

### BUSINESS UTILITY

For the club accounts or small business user. Prints a "trial balance" or "P&L reports" via the programmable spreadsheet generator. Needs the Bank Manager. Saves hours of work.

**Bus Util Pack £12.00**

### TYPING TUTOR

Quickly learn to touch type. Over 90 smoothly graded lessons graduate you from the basic home keys to complete keyboard mastery. Word scan or exact key checking, targets may be revised, rhythm metronome, key click, free format options. Recommended for adult education.

**Typing Tutor £15.00**

### SPREADSHEET MK V

Low cost, versatile spreadsheet. 26 cols by 900 (Arch) or 99 (BBC B) rows, loaded with many functions and facilities inc programmable report writer and input scripts.

**Spreadsheet MK V disk £15.00**

Add £1 p&p per order (Overseas £3.50). Programs suitable for all Archimedes, A3/4/5000, BBC Master, Compact and BBC B series. State computer type (eg A3000, BBC B etc) and disk type (eg 3 1/2" or 5 1/4" 80 track or 5 1/4" 40 track)

**CONTEX COMPUTING**

(Ref AU), 15 Woodlands Close,

Cople, Bedford MK44 3UE



**Tel: 0234 838347**

## 12th successful year

### GENEALOGY

(See review in Feb '87 and Aug '89)

**FAMILY HISTORY SYSTEM** The most popular program ever written for us. Enables you to produce a full family tree and many other genealogical listings.  
**BBC/Master/Compact version £21.95 Archimedes version £25.95**

### PAYROLL

**EXTENDED PAYROLL** Now in its twelfth year. The only BBC program for wages, tax and National Insurance for up to 400 employees covered. Four weekly and Monthly pay, whether of data per employee in hours or employee information. **£14.95**

**The only payroll program for Acorn Computers**

Extended hours or pay from hourly wages. Pension deductions, sick pay, SSP, SMP, and post tax adjustments and even no pay. Three types of pay slip printout and an optional coin analysis. An annual contract keep you up to date with the budget changes. Send for demo disc **£59.50**

### BOOKKEEPING

(see review in March '89 Acorn User)

**1) CASHBOOK** Double entry bookkeeping for home or club use. All data kept in memory. Three character analysis code enables you to know where the money comes from and where it goes. 48 transactions per A4 page. Analysis summary up to 30 categories. **£14.95**

**2) CASHBOOK D As 1)** + random access giving 2000 items. CASH/BANK or VAT/BANK headings. Password control. String or numeric searches. For schools, clubs & non credit businesses. **£24.95**

**3) ACCOUNT As 2)** + Credit facility and statements. For small businesses working with credit. **£39.95**

**4) ACCOUNT-PLUS As 3)** + Invoicing, Orders, Quotations etc. Full sorting of data by 5 options. Automated statements, mailing labels. Multiple automatic nominal ledgers. **£88.13**

For independent schools and VAT businesses who wish to cut the effort. **£59.95**

**5) TAXMAN** This new program which has been under development for three years allows you to enter all your transactions and to printout end of year results with balance sheet and even calculate tax due. The Inland Revenue love it and so do we. Results can be taken from our other accounting programs and entered into TAXMAN making a superb combination. **£235.00**

**6) Micro-Trader is a full accountancy package with features right through to final balance sheet. Stock Control at £75.00 extra.** For shops/firms, accountants wanting full accounting facilities. Payroll can be integrated. **£235.00**

### MAILING

218 addresses in memory or up to 1875 on random access disc. Multiple selected and repeat labels, mail merge, full sorts. Ideal for subscription lists, promotions, any kind of mailing. **£14.95**  
**£35.95**

Ask for detailed brochure for more software and other items.

(FAX AVAILABLE)  
Kildonan Courtyard, Barrhill,  
S. Ayrshire Scotland. KA26 0PS.  
Tel: 0465 82288

PLEASE NOTE OUR MOVE & CHANGE OF ADDRESS FROM CORNWALL

## SPRITELY SOLUTIONS

This month we continue our introduction to sprite plotting with listings *SprDem6* to *SprDem9*.

Some of the sprite op calls exist to make the writing of a sprite editor easier. For example, ops 31 and 32 allow the insertion and deletion of a row of pixels. *SprDem6* illustrates these calls and others. A sprite size% pixels square called 'demo' is created.

PROCinsert is called to repeatedly 'insert' a cross at a random position around the middle of the sprite. This cross is two pixels wide and is made by deleting the first and last rows, inserting two rows in the middle, then doing the same with the columns. PROCinsert takes three parameters; the x and y position of the cross and the colour to be used, which is cycled gradually through the available range.

Any inserted row or column is by default colour 0. The cross painted by PROCinsert is in fact just one pixel wide, leaving a black row and column for a 'drop-shadow' effect.

To paint the cross in the sprite, VDU output is diverted temporarily to our sprite. This is a very useful feature of Risc OS. Sprite op &3C is used. This takes three parameters: sprite area, sprite name and save area. The save area is a block of memory in which current VDU info is stored, so when output is switched back to the screen, all is okay. The amount of memory you should set aside for the save area can be found using sprite op &3E, as *SprDem6* does. The first word should be set to 0 before redirection. The call also returns in r0-r3 the values for r0-r3 that are to be used to switch output back again.

The sprite is not plotted using the traditional op &22 but with &34. This takes extra parameters in R6 and R7. R6 points to a four-word scaling matrix: xmult, ymult, xdiv and ydiv. The sprite is scaled horizontally by a factor of xmult/xdiv and vertically by ymult/ydiv. R7 can point to a colour translation table. This is not used by *SprDem6* but a later example does perform some colour translation. The purpose of this call is really to allow sprites to be displayed in any screen mode.



*SprDem7* (shown above) also illustrates VDU output being redirected. In this case, output is switched to a mask. This technique is particularly useful for cutting out 'holes' in a sprite. For example, to cut out a circle

in a square sprite you could create a mask for it, redirect output to the mask and use CIRCLE FILL with an appropriate colour.

*SprDem7* begins by creating a sample sprite 'picture'. PROCmessage is called to display a simple message in randomly chosen colour at various sizes. Interestingly, there is a sprite op call (&33) to plot a system font character at a given scale and this is used by PROCmessage. The four-word scaling matrix is the same as used for scaling a sprite.

The picture is then repeatedly plotted using its mask. A set of concentric and ever-growing circles are plotted in the mask. There are eight circles in all and each is plotted in a colour that has only one bit set (colour 1, colour 2, colour 4 and so on). When a sprite has a mask, each mask pixel has as many bits as the real pixel to which it applies. Therefore masks can be used not only to make pixels visible or invisible, but to remove particular bits from a pixel's colour. In this case the picture is revealed a bit at a time by the expanding circles.

Although the previously mentioned ColourTrans module has too many facilities to describe here, some of the simpler calls are illustrated by *SprDem8* (right) which also shows how to give a sprite a 'shadow' by using sprite op &32 to plot the mask on the screen.



To plot a sprite of one mode in another requires the creation of a colour translation table. This is simply a lookup table that the sprite op uses to convert the sprite at the time of plotting. A suitable translation table can often be created with just a single call: ColourTrans\_SelectTable.

*SprDem8* builds up a message as a set of sprites with masks. These are then whizzed about the screen, squashing and stretching them along the way using a standard four-word scaling matrix. The program operates in 2, 4, 16 or 256 colour modes; press 0-3 to select the number of colours. PROCselect\_mode sorts out the colour translation table. If mode 13 is used, no table (-1) is required since our sprite has 256 colours. For 4 and 16 colour modes the palette is set up to include some greys. For all non-256 colour modes ColourTrans\_SelectTable is used to create a table for use with sprite op &34.

The sprite op call &32 plots a scaled mask. Its operation is exactly like that of &34 except the shape of the sprite is plotted using the current background colour. This is useful for painting with different shaped brushes in sprite editors, and for adding shadows as is the case here.

The final demo, *SprDem9*, shows off two calls new to Risc OS 3.1. Ops &37 and &38 behave similarly to the standard plot sprite and mask scaled operations but allow the sprite or mask to be mapped onto an arbitrary parallelogram. R3 contains flags: if bit 0 is set, r6 points to an eight-word co-ordinate block. This contains the X and Y co-ordinates of the final parallelogram (in 1/256ths OS units). If bit 0 is clear, r6 points to a transformation matrix. Bit 1 set means R4 points to the source rectangle within the sprite. Otherwise the whole sprite is scaled.

A sample sprite is created and plotted. Move the mouse around to rotate and scale the sprite and press any button to toggle the shadow. An Arm3 will have a great effect on the speed of this demo.

## SPRITE OPS IN DETAIL

Op	Description	R1	R2	R3	R4	R5	R6	R7 Example
31 (&1F)	Insert row	>block	>sprite	row				<i>SprDem6</i>
32 (&20)	Delete row	>block	>sprite	row				<i>SprDem6</i>
44 (&2C)	Write pixel mask	>block	>sprite	X	Y	?solid		<i>SprDem8,9</i>
45 (&2D)	Insert column	>block	>sprite	column				<i>SprDem6</i>
46 (&2E)	Delete column	>block	>sprite	column				<i>SprDem6</i>
50 (&32)	Plot mask scaled	>block	>sprite	X	Y		>scale	<i>SprDem8</i>
51 (&33)	Paint char scaled	char		X	Y		>scale	<i>SprDem7</i>
52 (&34)	Put sprite scaled	>block	>sprite	X	Y	action	>scale	>trans <i>SprDem6,8</i>
55 (&37)	Plot mask transf.	>block	>sprite	flags	>ABCD	action	>ABCD	>trans <i>SprDem9</i>
56 (&38)	Plot sprite transf.	>block	>sprite	flags	>ABCD	action	>ABCD	>trans <i>SprDem9</i>
60 (&3C)	Output to sprite	>block	>sprite	>save				<i>SprDem6,7,9</i>
61 (&3D)	Output to mask	>block	>sprite	>save				<i>SprDem7</i>
62 (&3E)	Read save area size	>block	>sprite	size				<i>SprDem6,7,9</i>
	ON EXIT	-	-	size				

Notes: > means parameter is an address, pointing to required data. >ABCD means parameter points to a rectangle or transformation matrix, as used by ops 52 and 53 - see text for details / ? means parameter is a flag (0 or 1).

*Learn a language the fun way with*

# LINKWORD

LANGUAGE SYSTEM

An exciting new way to learn a language for adults and children. Linkword is ideal for the holiday maker or business traveller and as a 'kick start' for children learning a new language at school.

Linkword uses memory techniques, teaching you by easy to remember word pictures in English to help you to recall the language you are learning.

Available in:  
**FRENCH**  
**GERMAN**  
**SPANISH**

**£39.95 + VAT**  
Per language  
or  
**£99.00 + VAT**  
for all 3

Linkword is the only language course which teaches you what words and grammar to learn and how to remember what you learn.



**MINERVA**  
SOFTWARE

MINERVA HOUSE, BARING CRESCENT, EXETER, EX1 1TL  
Tel. (0392) 437756 Fax. (0392) 421762

FOR ALL ACORN  
RISC OS  
COMPUTERS

# BIO LOGICALLY

Dave Acton finds more applications for his general-purpose program

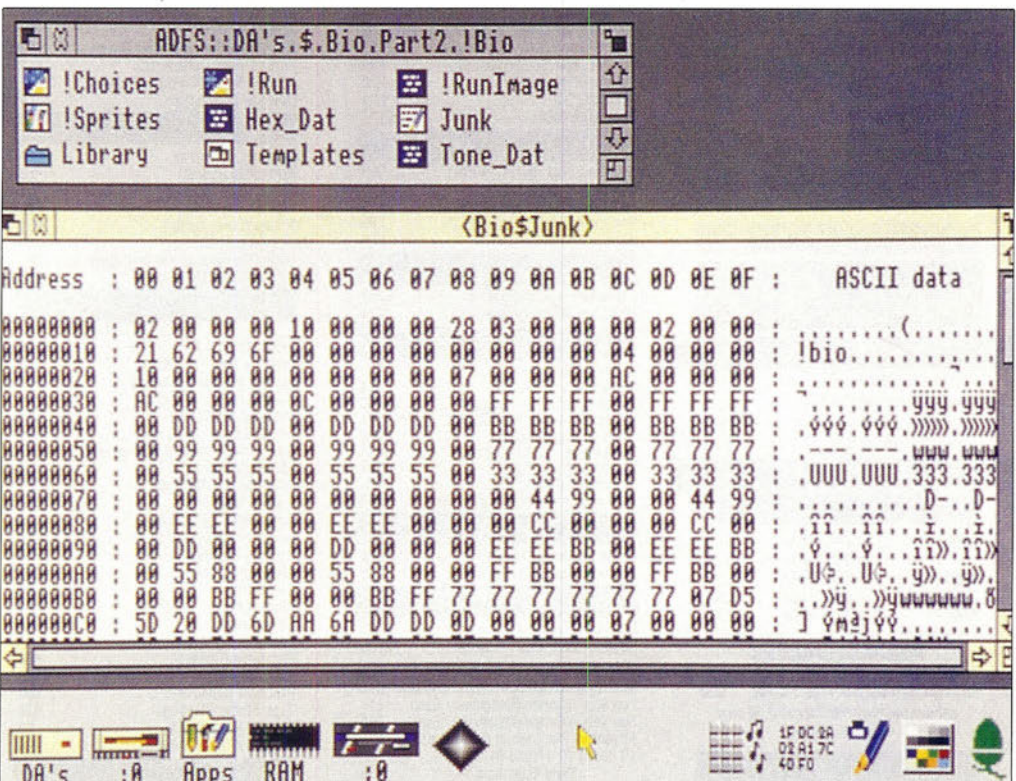
Two months ago we introduced a helpful program for all seasons called *BIO*. It is designed to let you write desktop utilities easily, by taking care of the hard bit: multitasking.

This month we have two modules to tack on to the main *BIO* application: *ToneDial* and *Hexdump*. You will need to have a copy of the controlling *BIO* application; this first appeared in February's yellow pages, but is also on this month's subscribers' disc.

## TONEDIAL

*ToneDial* allows you to dial a telephone number – without touching your telephone keys. *Tonedial* loads on to the icon bar. To use it, click on the icon then simply enter the number and press RETURN. The window disappears and those familiar dialling beeps are heard. If you hold your telephone up to the speaker, the number is dialled. Note that this application only works on modern digital networks.

Your Basic module needs to have a couple of extra functions to deal with the window. `FNxxx_mouse` is called whenever you click on an icon and takes five parameters: the mouse x, y and button states,



Hexdump lets you check out your memory fast

the window handle and icon number. It should return TRUE if the icon pressed is to start the process. Similarly, `FNxxx_key` is called whenever there is an unusual keypress in an icon. This takes seven parameters: the window handle,

icon number, caret x and y positions, caret height, the icon containing the caret and the key pressed (represented in Ascii). Again, TRUE is returned if the key is intended to start the process. Typically, RETURN in the last writeable icon should set things going.

Finally, your main routine `FNxxx` should check for a null input filename (`file$=""`). This means the process was started by a mouse click or keypress, not a file drag. In this case, the input data should be extracted from the appropriate icons. `FNicon_text` can be used here.

## HEXDUMP

*HexDump* allows any file to be dragged on to the icon and the result is the hex dump of the file in *Edit* format.

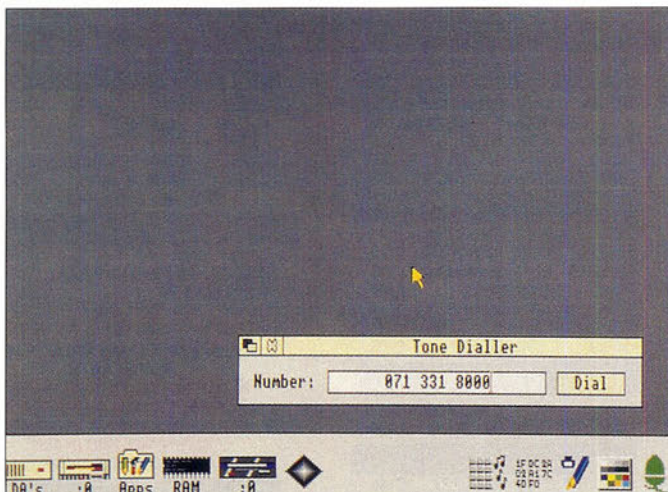
This module is a good example of how a window may be used just to specify preferences. Icons are used to

determine the type of output from the module. Several procedures and functions are built into the *BIO* application for this purpose:

- `PROCset_button(w,i,state)` selects or deselects icon i in window w depending on whether state is TRUE or FALSE.
- `FNbutton_state(w,i)` returns whether an icon is selected (TRUE or FALSE).
- `FNicon_text(w,i)` returns the current contents of a text icon.
- `PROCwrite_in_icon(w,i,t$)` sets the text in a text icon to t\$. The icon *must* be indirected and there *must* be enough space for the new string.

To design a window template for your own *BIO* modules use Acorn's *FormEd* or Armen's *WindowEd*. This should contain one window definition with the module name as an identifier.

For more general details on *BIO* turn to *BAU* February 93.



BIO can simplify your telecommunications needs

# DABS PRESS

Acorn  The choice of experience

**0772 623000**

Formerly Orion Computers

# A3010 £424

**A3010 WITH A FREE DABS BUNDLE: JOYSTICK, 5 ALIEN IMAGES GAMES, 3 DABS PRESS BOOKS OR WITH THE FS A FREE 1MB RAM UPGRADE (TO 2MB)**



**A3010 Family Solution £424**  
**A3010 Learning Curve £680**

# A3020 £749

**A3020 FD System £749**  
**A3020 HD 60 System £899**

**These prices include a FREE 2Mb to 4Mb Upgrade**  
**A3020 Option: Multiscan monitor included for extra £50**

## ACORN COMPUTERS

### ACORN A4 ACCESSORIES

A4 2Mb RAM Upgrade	£110
A4 60Mb HD Upgrade	£350
A4 Battery Pack	£50
A4 Econet Upgrade	£50
A4 Portable Handbook	£7.50
A4 Shoulder Bag	£35
A4 Technical Reference Manual	£65
A4 Welcome Guide	£10

### FINANCE SCHEMES

**We Operate the Acorn Educational, Teachers and Finance Scheme. Call for details**

### MONITORS

Philips CM8833 MkII	£199
Acorn Colour (AKF30/40)	£220
Microvitec Cub Scan 1440	£399
Taxan MultiVision 795	£460

### UPGRADES

#### RAM

<b>A3000</b>	1 to 2Mb RAM	£45
	1 to 4Mb RAM	£129
<b>A3010</b>	1 to 2Mb RAM	£39
<b>A3020/4000</b>	2 to 4Mb RAM	£85
<b>A5000</b>	2 to 4Mb RAM	£85
<b>A400 Series</b>	RAM	£30 per Mb

#### RISC OS 3.1 UPGRADES

A5000	£16 Other	£40
Rom carrier is required for A305, 310, 440		£20

(Above memory fitted for £10.00 plus courier charge)

### HARDWARE UPGRADES

ARM3	from £175
Econet Module	£47
Joystick Interface (Leading Edge)	£34
Joysticks	from £10
Midi Expansion Card	£65
Scanlight Junior 256	£199
Scanlight A4	£289
Vision Digitisers	
A3000/3010/3020/4000/5000	
Mono Internal	£49
Colour Internal	£79
Hi-Colour Internal	£129

## ARC/A3000/A4000/A5000 APPLICATIONS

### D.T.P.

Impression II (CC) Latest Version	£125
Impress. Bus. Supplement (CC)	£39
Desktop Folio (ESM)	£79
Equisor (CC)	£34
Showpage (CC)	£108

### WORD PROCESSORS

1st Word Plus Rel. 2 (Acorn)	£69
Impression Junior (CC)	£75
PenDown (Longman Logotron)	£46
PenDown Plus (Long. Logo.)	£68
Wordz! (Colton)	£89

### INTEGRATED PACKAGES

Pipedream 4 (Colton) <b>New</b>	£178
Desk Top Office II (Minerva)	£79

### DATABASES/HYPertext

Flexifile (Minerva)	£84
Multistore Version II	£154
Genesis II (Oak Solutions)	£109
Knowledge Organiser (Clares)	£41
PinPoint (Long. Logo.)	£79
PinPoint Jnr (Long. Logo.)	£23
Maggie (Long. Logo.)	£53
Squirrel (Dig Serv)	£120
Archivist Database (Oregon) <b>New</b>	£26

### ACCOUNTING SOFTWARE

Home Accounts (Minerva)	£34
Business Accounts (Minerva)	£298

### LANGUAGES

Desktop C (Acorn)	£185
Desktop Assembler (Acorn)	£125

### EDUCATION

Fun Sch. 3 Series (Database) Each	£18
Fun Sch. 4 Series (Database) Each	£18
Adventure Playground (Stormsoft)	£14
10 out of 10 (Triple R)	
Early Essentials <b>New</b>	£19
English	£19
Maths	£19

10 out of 10 **Coming Soon**  
French, German, Italian, Maths (Algebra), Science, Spanish  
Christmas Adventure £19

### SPREADSHEETS

Schema (Clares)	£96
Eureka (Long. Logo.)	£99
Resultz! (Colton)	£TBA

### UTILITIES

Compression (CC)	£39
MultIFS (Arxe)	£26
Hearsay II (Beebug)	£69

ARCTerm7 (Serial Port)	£67
ProDriver (Ace)	£34
Dot Matrix Colour Printer Driver	£15
Turbo Driver + Cable (CC)	£49
HP Deskjet 500C Printer Driver	£15
Desktop Thesaurus	£19

### MUSIC

Ancestry (Minerva)	£59
Armadaeus (Clares)	£59
Rhapsody II (Clares)	£45
Tracker (Serial Port)	£38
Notate (Long. Logo.)	£51
Scoredraw (Clares)	£44
Digital Symphony (Oregon) <b>New</b>	
Rhythm Box (EMR)	£36

### GRAPHICS

Artworks (CC) <b>New</b>	£149
Poster + Font (4Mation)	£79
Render Bender II (Clares)	£98
Graphbox Pro. (Minerva)	£104
Pro Artisan (Clares)	£79
Revelations (Long. Logo.)	£66
Revelation II ImagePro (Long. Logo)	£102
Atelier (Minerva)	£69
Chameleon (4Mation)	£33
SmArt (4Mation)	£50
SmArt Filer (4Mation)	£32
Snippet (4Mation) V.2	£37
Vector (4Mation)	£79
ARCLight (Ace)	£46
Euclid (Ace)	£64
Mogul (Ace)	£24
Splice (Ace)	£32
Tween (Ace) Version 2	£42
Illusionist (Clares)	£78
Titler (Clares)	£120
PrimeArt (Minerva)	£59
Type Studio (Beebug)	£38
Font FX (Data Store)	£9
Shape FX (Data Store)	£9

### MISC

PC-Emulator Latest Version (Acorn)	£93
Investigator II (Leading Edge)	£22
ARCTiculate (4th Dimension)	£18

### BOOKS/MANUALS

Program. Ref. Manuals	£77.00
Arc. Games Makers Man.	£14.95
BASIC VI Guide - BBC	£19.45
A3000 Technical Guide	£28.95
Acorn D.T.P. Manual	£10.00
Acorn Desktop C	£25.00
Acorn Desktop Assembler	£25.00
First Impressions + Disc	£29.95
Good Impressions + Disc	£26.95

There is NO VAT (0%) on all books.

## RIBBONS AND PRINTER CARTRIDGES

### BRANDED RIBBONS

Amstrad DMP2000/3160	£5
Citizen 120D	£5
Citizen Swift 24 Black	£5
Citizen Swift 24 Colour	£11
Epson LX80/86	£4
Epson FX80, MX80, LX800	£5
Epson LQ400, 550 fabric	£6
Epson MX100, FX1000, FX1050	£6
Epson EX800/1000 Black	£7
Panasonic KXP145, KXP115	£6
Panasonic KXP140	£10
Star LC10	£4
Star LC10 4 Colour	£6
Star LC200 Black	£6
Star LC200 Colour	£11
Star LC24/10 / LC24 200 Black	£8
Star LC24 200 Colour	£11

### PRINTER CARTRIDGES

Canon LBP4 Toner Cartridge	£55
Canon LBP8 Toner Cartridge	£62
Canon BJ130 (BJ1481)	£10
Canon BJ10e/10ex (BC01)	£15
Canon BJ300/330 (BJ1642)	£10
Cjet 132/Canon PJ1080 Black	£10
Cjet 132/Canon PJ1080 Colour	£12
HP Paintjet Black	£18
HP Paintjet Colour	£20
HP Deskjet Black High Capacity	£18
HP Deskjet 500C Colour	£20
Qume Crystal Print Toner Set	£58
Qume Crystal Print Drum Set	£88

### COMPATIBLE RIBBONS

Amstrad DMP2000	£3
Amstrad LQ3500, PCW8256	£3
Brother M2024	£5
Brother M1009, M1109	£4
Brother HR10, 15, 20, 25, 35 Fabric	£4
Brother HR10, 15, 20, 25, 35 MS	£4
Canon PW1080A	£4
Citizen 120D/Swift 24	£3
Epson LX80, 86	£3
Epson FX80, MX80, LX800, LX850	£3
Epson FX1050, LX1000	£4
Epson LQ500, LQ800, LQ850	£4
Epson LQ1000, LQ1050, FX1000	£6
Epson LQ2500, LQ2550	£6
Epson EX800	£6
Panasonic KXP1081/90, 1180/24	£4
Seikosha GP100	£3
Shanwa CP80 Multistrike	£5
Star LC10/LC20	£3
Star LC10 4 Colour	£5
Star LC24/10, LC24/200	£4
Star LC200 Black	£3

Discounts available on all ribbons for quantities of 3 or more.

Please call for prices on ribbons not listed here. We supply almost any ribbon required and, dependent on quantity, any colour. Please Note - Quoting the CARMA Group Code speeds up our search for a ribbon compatible with your printer.

## PRINTERS

### CANON (INKJET PRINTERS)

BJ10EX	£162	BJ10EX ASF	£42
BJ10EX Batt	£42	BJ10EX Turbo	£220
BJ300	£299	BJ330	£359
BJ200	£274	BJC 800	£1285
Turbo Driver & Lead for BJC800			£89

### CITIZEN (2 YEAR WARRANTY)

120D+ Parali	£94	Swift 9 Colour	£144
Swift 200	£152	Swift 200 Col	£175
Swift 240	£199	Swift 240 Col	£211
Project	£309	PN48	£189

### EPSON (NEW MODELS)

LX400	£92	LQ-570	£205
-------	-----	--------	------

### HEWLETT PACKARD

Paintjet	£499	DeskJet 500	£269
DJ 500 Col.	£339	DJ 550 Col.	£429

### PANASONIC

KX-P1170	£100	KX-P2123	£149
KX-P1123	£129	KX-P2123Col	£185
KX-P2180	£129	KX-P2624	£268
KX-P2180Col	£144		

### STAR

LC20	£102	LC24/20	£148
LC100 Col	£129	LC24/100	£149
LC200 Col	£155	LC24/200	£162
SJ48	£164	LC24/200 Col	£219
LC15	£185	LC24/15	£255

Other Star prices please Call

### LASERS

Qume 300dpi	£866
600DPI Laser Direct Card (CC)	£326
Canon LBP4 lite	£478
Canon LBP4 + 1Mb - 4ppm	£629
HP LaserJet 4 (600 dpi)	£1027

We will quote on many lasers not listed

### PLEASE NOTE

All our printers are UK Models and NOT grey imports. Please take this into account when deciding where to purchase your printer.

FREE ARC CABLE WITH ALL PRINTERS

**Please Call For Any Printers not Listed.**

# A5000 from £1249

EX VAT

**A5000 2Mb HD80 System £1399**  
**A5000 Learning Curve £1445**  
**A5000 4Mb 120 System £1599**

### SPECIAL OFFER A5000

**2Mb 120HD £1249**

Includes A5000, Connor 120Mb Hard Drive, AKF40 Colour Monitor or add £50 for Acorn Multiscan Monitor, add £85 2Mb to 4Mb Upgrade



# POCKET BOOK



**Pocket Book £212**  
256k RAM 16 bit processor  
Upto 4Mb SSD storage  
**SPECIAL FREE OFFER**  
4 Batteries & Recharger

**Cumana World of CD-ROM £595**

Call for details

# A4000

## £949

EX VAT



**A4000 HD80 SYSTEM £949**  
**A4000 HOME OFFICE £999**  
 Option: Multiscan monitor add £50

**FREE 2Mb to 4Mb Upgrade**

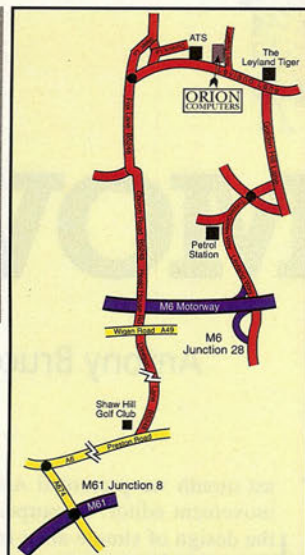
# A4 portable

## £1399



**A4 2MB FD SYSTEM £1399**  
**A4 4MB HD60 SYSTEM £1699**

**FREE WITH AN A4 A Spare Battery & Shoulder Bag**



### ORDERING INFORMATION

Please send your orders including a signed cheque, postal order or credit card number & start/expiry date (NOT CASH) to:

Dabs Press,  
 Department 23  
 250 Leyland Lane, Leyland,  
 Preston, PR5 3HL.

**Please make all cheques and bankers drafts payable to Dabs Press.**  
 Please don't forget to add the VAT & Carriage

Telephone orders may be placed between 9.00am and 5.00pm. Please have your credit card number and both start and expiry date ready.

**Tel: 0772 623000**  
**Fax: 0772 622917**  
**Open Mon-Fri: 9am - 5pm.**  
**Sat: 10am - 1pm.**

### CABLES

9 pin to Scart + Audio 1.2m	£8
9 pin to Philips 8833 Mk11 1.2m	£8
Arc Keyboard Extension Cable 2m	£7
Arc Mouse Extension Cable 2m	£7
Arc Keyboard Replacement Cable	£7
Arc Mouse Replacement Cable	£7
4 way trailing socket	£5

Please specify machine when ordering

### BULK DISKETTES

All our disks come complete with labels etc. and are 100% certified error free. In the event that a disk fails it will be replaced immediately.

DISK TYPE	10	100	250
TDK DS/DD 3 1/2" each	50p	47p	45p
TDK DS/HD 3 1/2" each	85p	80p	75p
DS/DD 3 1/2" each	50p	40p	35p
DS/HD 3 1/2" each	75p	65p	55p
DS/DD 96tpi 5 1/4" each	30p	20p	18p

**ALL PRICES ARE EXCLUDING V.A.T. & CARRIAGE (Where Applicable)**  
**FREE CARRIAGE ON ALL SOFTWARE**

**Please note that carriage is now charged on all products except software.**

Software	FREE
Consumables/Small Hardware	£3.00
Large Items ie. Comps., Printers, etc	£7.00
Next working day (Any item)	£12.00
Saturday delivery	£30.00
N. Ireland, C.I., I. of M., Highlands	£20.00

TERMS: Add 17.5% VAT to all prices, except books, for all UK/EEC orders. UK carriage charged at appropriate rate. Overseas carriage charged at cost. Quotations available. Access, Visa, Switch, AMEX accepted. All prices are subject to change without notification. Goods available subject to being unsold. Official orders accepted from public sector, education, Plc's, Tender invitations welcome. E & O.E.

© Dabs Press. (11.2.93)

### ARC/A3000A4000/A5000 GAMES

2067BC (Oregon)	£17	Hero Quest (Krisalis)	£24
3D Construction Set (Domark)	£35	Holed Out Compendium (4th Dime.)	£20
Air Supremacy (Superior Soft)	£17	Iron Lord (Cugnus)	£14
Alderbaron (Arc Angels)	£28	Ixon (Software 42)	£18
Alerion (Alien Images)	£11	James Pond (Krisalis)	£19
Aliped (Alien Images)	£11	Last Ninja (Superior)	£19
Alien Invasion (Alien Images)	£11	Legend of the Lost Temple (Eterna)	£19
All-In Boxing (Alien Images)	£11	Lemmings (Krisalis)	£19
Arcadium (Alien Images)	£11	Lotus Turbo Challenge II (Krisalis)	£19
ARChist (4th Dimension)	£19	Manchester Utd. Europe (Krisalis)	£19
Ballarena (Eterna)	£14	Microdrive II World Edition (C.I.S.)	£24
Black Angel (4th Dimension)	£26	Nebulus (Krisalis)	£19
Blaston (Eterna)	£15	Nevryon (4th Dimension)	£15
Break 147/Superpool (4th Dime.)	£26	Oh No, More Lemmings (Krisalis)	£16
Cartoon Line (Eterna)	£18	Omar Sharif's Bridge (Krisalis)	£22
Cataclysm (4th Dimension)	£20	Pandora's Box (4th Dimension)	£20
Chequered Flag (C.I.S.)	£18	Pesky Muskrats (Coinage)	£19
Chess 3D (Micropower)	£14	Play it Again Sam 1 (Superior)	£20
Chocks Away Version II (4th Dim.)	£20	Polzone (Eterna)	£14
Chocks Away Extra Missions (4th D)	£15	Populous (Krisalis)	£22
Chocks Away Compendium (4th D)	£26	Powerband V. II (4th Dimension)	£20
Chopper Force (4th Dimension)	£23	Quest For Gold (Krisalis)	£19
Chuck Rock (Krisalis)	£19	Saloon Cars Deluxe (4th Dime.)	£28
Colony Rescue (Alien Images)	£11	Saloon Cars Extra Courses (4th D)	£16
Cyber Chess (4th Dimension)	£39	SimCity (Superior)	£24
Cyborg (Alpine)	£19	Speech (Superior software)	£14
DreadNoughts (Turcan)	£25	Spheres of Chaos (Matt Black)	£18
Dreadnoughts - Bismarks (Turcan)	£14	Starch (Alien Images)	£11
Dreadnoughts - Ironclads (Turcan)	£14	SWIV (Krisalis)	£19
Dungeon (4th Dimension)	£26	The Real McCoy 1, 2 (4th Dim) each	£23
Ego Raptor 4 (Superior)	£17	The Real McCoy 3 (4th Dim)	£23
Elite (Gold Edition) (Hybrid)	£32	Twin World (Cygnus)	£14
Enter the Realm (4th Dimension)	£20	Waterloo (Turcan)	£19
E-Type Compendium (4th Dime.)	£20	Wolf Pack (Software 42)	£18
Fervour (Clares)	£19	World Champ. Boxing Manager (Kris)	£18
Fine Racer (Eterna)	£14	X-Fire (4th Dimension)	£20
Galactic Dan (4th Dimension)	£20	Zelanites (Micropower)	£14
Gods (Krisalis)	£19		
Gribbly's Day Out (Coin Age)	£19		
Grievous Bodily ARM (4th Dime.)	£20		
Grue (Dream)	£22		

**NEW GAMES IN RED**  
**COMING SOON IN YELLOW**  
 Please ring for current prices on software NOT listed here.

**BUY ANY 3 GAMES GET 1 ALIEN IMAGES GAME FREE**

**Dabs Press - Acorn**

**Dabs Press - Acorn**

**Dabs Press - Acorn**

## DABS PRESS PUBLISHING

Tel. 0772 623000  
 Fax. 0772 622917

### ACORN/ARC. SOFTWARE

**Instigator** Utility system providing disc sector editor, memory editor, disassembler, command line archiving, and much more. Price £49.95

**Arc PC Emulator Shareware** Similar to Master 512 Shareware but for the Arc PC Emulator. Two collections of five discs each. URRP £34.95. Now on special offer, both collections for £25.

### ACORN/ARC. BOOKS

**Archimedes Assembly Language** The only tutorial and reference on ARM assembler on the market, with many RISC OS examples. Price £14.95 or £21.95 with disc.

**Archimedes First Steps** Introductory book for the Arc, covering the basic operations and use of IEdit, IDraw, etc. Price £9.95

**Archimedes Operating System** Useful summary of OS information with detailed examples. Price £14.95 or £21.95 with disc.

**Basic V** A practical guide to programming in BASIC V on the Acorn Archimedes, with a wealth of easy-to-follow examples. Price £9.95

**Budget DTP** The book that will save you money. Takes you step by step through all aspects of DTP on the Archimedes. Price £12.95

### BBC SOFTWARE

**Hyperdriver** The ultimate printer driver ROM, with over 80 commands, a built-in NLQ character set, WYSIWIG previewing, access from View, Wordwise, Interword or BASIC. 100 page manual. For B/B+/E/M/C. Price £29.95 ROM, £24.95 disc for SRAM.

**Minidriver** As HyperDriver but for Mini Office II. Includes Viewdata terminal. Price £24.95 ROM. SRAM version £19.95.

**Mos Plus** Utility ROM for Master 128s only fixing EDIT and CLOSE#0 bugs, ADFS format, verify and backup in ROM, backup/compacting in SRAM, alarm clock and configurable startup facility and much more. Price £12.95 ROM, £7.95 SRAM

**Sidewriter** Pop-up notepad for SRAM users (any SRAM machine), works with any software. Price £7.95

**Fingerprint** SRAM or main memory 6502 machine code monitor/disassembler/memory editor. For B/B+/E/M/C/ Price £9.95.

**Conversion Kit** Ready-made 6502 assembler routines, for learning or development. Price £7.95

### BBC BOOKS

**View Dabhand Guide** Bruce Smith's comprehensive guide to View word-processor. "For those who want a complete thorough and readable guide to View." (Beebug). £12.95 or £17.95 with disc.

**Master Operating System** David Atherton's definitive reference work including the famous 'differences between all eight-bit models' section used by countless programmers to ensure compatibility across the full eight-bit range. £12.95 or £17.95 with disc.

**Mini Office II Guide** Detailed tutorial by Bruce Smith and Robin Burton for the BBC/Master versions of the software. Price £9.95 or £14.95 with disc.

**Mastering Interpreters and Compilers** Fascinating Bruce Smith title on creating high level languages. £14.95 with free disc.

### MASTER 512

**Master 512 Shareware Collections** Two collections of PC shareware, all tried and tested on the 512. Includes WP's, spreadsheets, databases, games etc. Five full 800k discs in each. Each collection normally £29.95, special offer £25 for both.

**Master 512 User Guide** Full instruction for using the 512 and DOS Plus, with tips on software compatibility. £9.95 or £14.95 with disc.

**Master 512 Technical Guide** The companion guide with full 512 programming information and hardware expansion projects. Price £14.95 or £19.95 with disc.

### OTHER DABS BOOKS

**Z88: A Dabhand Guide** Introduction to the Z88, by the designers of the machines own software. £14.95

**Z88 Pipedream Guide** John Allen's detailed work on all aspects of Z88 PipeDream. Good explanations of printing. Price £14.95

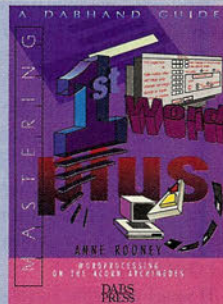
**Psion LZ OPL Guide** Ian Sinclair's guide to OPL programming on the LZ series of Organiser machines Price £12.95

**NEW Getting the Most from The Amstrad NC100 Notepad Computer** Ian Sinclair's guide to this popular new notepad computer, packed with hints and tips on how to get round problems, tackle awkward jobs etc. Makes you realise that you cannot get full potential from this machine in 5 minutes!!

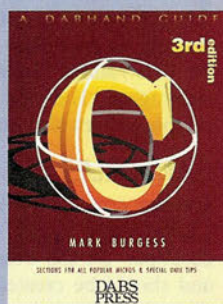
**Ordering Information** Please send name, address quantity, product required & cheque made payable to **DABS PRESS**

or Access/Visa No. with start date & expiry date to: Dabs Press Publishing FREEPOST (PR1327) Leyland, Preston PR5 3BR

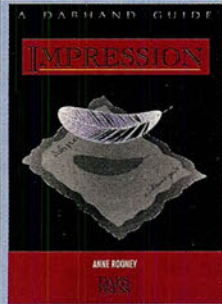
**Free Carriage on all books and software from Dabs Press Publishing.**



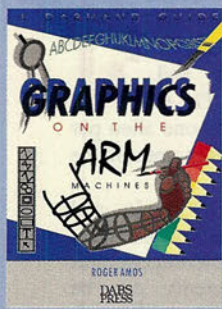
A step-by-step guide that takes you through all the features of 1st Word Plus on the Archimedes. Price £13.95 or £21.90 for book and disc.



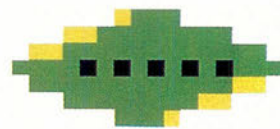
The 3rd edition of this acclaimed popular account of the C programming language, is the most detailed yet. Packed with useful programs and written in a clear in efficient way, this edition of the C book boasts even more information than before. Price £16.95



A guide to this powerful document processor which explains how to produce anything from a business card to a full length book. Price £14.95 or £16.95 with disc.



A journey through all aspects of graphics on the Acorn machines. This book unravels the large variety of programs available for all illustrative and graphic work, scanning and picture manipulation. Extensive colour plate section. Price £14.95



# MOVING TARGETS

Antony Bruce Lytis animates his aliens and puts everything together

Last month we presented *AlienEd*, the alien movement editor. Its purpose was to allow the design of simple alien movement paths. This month we enhance the editor and provide one last utility needed to aid the final game design.

## ALIENED2

Each movement path designed with the original *AlienEd* was associated with a single sprite. This did not allow different sprites to use the same movement path; for example, different rocket designs, all of which take off and accelerate upwards, or aliens whose sprites are animated. Adding the extra lines of *AlienEd+* adds an extra box in which you can type a name for a movement path. This may be up to 12 characters in length (no spaces please).

As before, saved files appear in the Movement subdirectory and lines in a movement file take one of two possible formats:

- <sprite> <path>
  - <name> <sprite> <path> [if path is named]
- I recommend you name all movement paths.

## PATTERN FILES

Now you have individual movement paths, you need to construct more complex definitions from them, called Pattern files. You must create another subdirectory called *Patterns* for these.

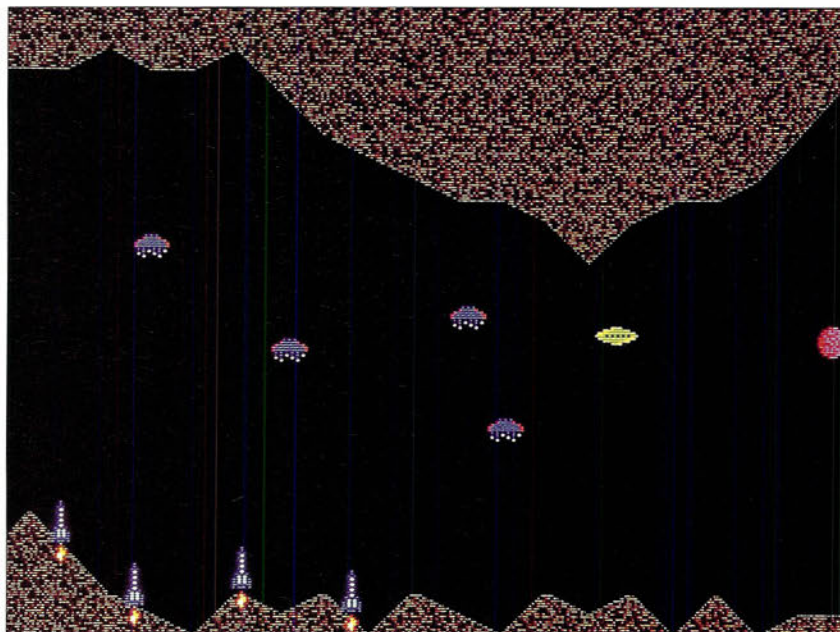
Pattern files are best created using *Edit* or similar. A Pattern file uses the paths named in a movement file to make up the pattern of movement for an enemy. Entries consist of a number of lines, all of similar form, except that the first one also contains the name of the enemy:

```
[<enemy>] <path to follow> [<time1>] [<time2>]
```

If time1 and time2 are zero, the enemy follows the path for ever. If time1 is present, this represents the number of steps along the path that it takes. The next line in the file then describes the next action to take. If both time1 and time2 are present, this represents a range. The number of steps actually taken will be chosen at random between the two values. The special path (LOOP) means start again. The box on the right shows some sample pattern definitions.

## GAME FILES

We are now in a position to define our whole game in a Game file, which describes all the components of a game and should be created in *Edit*. The next page shows an example. All lines must be present and, as you can see, each names a component file of the game.



All these aliens can now be individually placed using *Populate*

## SAMPLE PATTERNS

```
Rocket1: RocketUp (always follow RocketUp)
Rocket2: RocketUp 40 (follow RocketUp for 40 steps then die)
Rocket3: RocketUp 20 60 (follow RocketUp for between 20 and 60 steps, die)
Rocket4: RocketUp 30 RocketGo (follow RocketUp 30 steps, then follow RocketGo)
Rocket5: RocketUp 25 RocketGo 50 (follow RocketUp for 25 steps, then RocketGo for 50, then die)
Saucer: Saucer1 50 90 Saucer2 10 40 (LOOP) (follow Saucer1 for 50 to 90 steps, then Saucer2 for 10 to 40 steps, then repeat indefinitely)
```

The Layout file contains details of where all the enemies are located along the landscape and at which points they become active. It is created by the editor, *Populate*, which you can find in the yellow pages. This edits the Layout file described in the Game file loaded at the start. If the given Layout file does not exist, an empty landscape is assumed.

Most of the screen is used to show the landscape. Scroll it by moving the mouse to the left or right edges of the screen. The bottom area of the screen shows the current Layout file name and the current enemy name. For an enemy to exist, it must be present in the Movement file and its associated sprite must also be in the Sprite file. Click on the arrows to either side of the enemy to step through the baddy list.

If you click the middle button over the landscape, the pointer turns into the sprite of the current baddy. This can be positioned anywhere on-screen and fixed by pressing the left button. The only restriction is that there can only be one alien per pixel column. Moving to the bottom area of the screen cancels placement mode.

Holding down activates the ID mode, and shows the names of any enemies you point to. This can be used to distinguish different enemies using the same sprite. An enemy can be removed by SHIFT-left-clicking on it.

Clicking on an existing enemy with the left hand button will select it (and make it flash). It



The new improved alien editor lets you handle animated baddies

can then be repositioned by clicking on it with the middle mouse button and placing it in the usual way. While an enemy is selected, its 'go' status is shown in the bottom area of the screen. This is used to activate the enemy during its progress across the screen. Some enemies will never activate (shown by —). This is the default state for new enemies.

Click on the — with the left hand button to set one 'go point'. This makes the enemy activate when it reaches the position shown on the screen above. Now, if you scroll the screen when the enemy is to the right of this point, the 'go' status will change to << to show it will become active at some point. As soon as it passes its 'go' point, the status will show G1 to show it has passed its go point. The go point can be changed by clicking on the << or G1 again. To clear the go status and revert to always inactive, click with SHIFT held down.

As with pattern definitions, a range of 'go' points can be set. Once a go point has been set with the left button, a second can be set by clicking with the right button. The enemy will then activate at some randomly chosen time between these two points. The status will show either <<, meaning before the first 'go' point, ?? for between the two points and G2 after the second go point; the enemy will definitely be active by this later time.

To save the Layout file, click on the file name in the bottom right hand corner, altering it if necessary, and press RETURN or a mouse button. If the name has been changed, the Game file will be updated too.

The box above shows a simple layout file. x values will be between 0 and the length of the landscape in pixels and y values between 0 and 255. Go points are between 0 and 320. Using a single go point of 320 will mean the alien is active as soon as it is visible. As you can see, the layout is defined in two parts. First comes a section marked by the keyword 'patterns'. After this comes a list of the pattern names of the

#### A GAME FILE

```
>Games.Test
; Tue,02 Feb 1993.14:42:22
Scenery: Rocks
Maps: Scap
Sprites: Aliens
Movement: Aliens
Patterns: Aliens
Layout: Level1
```

#### A LAYOUT FILE

```
>Layout.Level1
; Tue,09 Feb 1993.11:59:10
Patterns:
Rocket1 0
Saucer1 2
Meteor 4
Alien 5
Layout:
0 330 28 308 120
4 677 58 320
4 689 97 320
4 732 123 320
2 923 122 266 142
2 1038 117 246
5 1185 76 204
5 1239 34 188
```

aliens placed in the landscape. Beside each is the unique pattern number. Then comes the 'layout' section which is simply a list of enemies; their pattern numbers, co-ordinates and go points.

A couple of months ago we covered the basics of sprite animation. We now need to think about how the sprites in our final game are to be animated and how the various stages of animation are to be stored. For the purposes of using *AlienEd*, you only need to specify a valid sprite name to try out a movement pattern. Similarly, when placing enemies using *Populate*, the sprite names associated with particular patterns are used to show the enemies' positions.

Rather than create another subdirectory, and another definition file type, animation for our final demo game is to be determined by simple sprite naming. Sprite names will be letters and valid symbols (like '\_'). The digits '0' – '9' are reserved for specifying animation stages.

Consider a simple rocket. If only one image of the rocket is to be used a simple sprite called 'rocket' could be defined. To animate its engines might need, say, four images. In this case, simply copy the basic rocket design and alter the four images slightly to produce the animated sequence. The four sprites should be called 'rocket1' – 'rocket4'.

The presence of a single digit after the main sprite name indicates that the images should be used in sequence for a single frame each. Adding another digit specifies how long that image is used for. For example, if you want to use the four rocket images for three frames each, create sprites *rocket13*, *rocket23*, *rocket33* and *rocket43*.

Combined with the movement paths, this provides a good deal of flexibility when it comes to animation. For the special case of rotatable sprites (see last month's article) use the suffix '0'. It is up to the final game code to decipher the sprite names and build the necessary tables for speedy animation.

#### ALL YOU NEED IS . . .

. . . a comprehensive list of files and directories needed for the final game, assuming all files are held in the parent directory *DemoGame*.

- *DemoGame.Games* holds the game files, created with *Edit*. Each game file contains a list of all the other files needed for a particular game; one from each of the other subdirectories.

- *DemoGame.Layout* holds the layout files, created with *Populate*. These contain the enemy positions and 'go' points.

- *DemoGame.Maps* holds the map files, created with *EdLand*. These describe the scenery for games; see our first article for details.

- *DemoGame.Movement* holds movement files, created with *AlienEd*. These describe movement paths, in turn combined to form patterns.

- *DemoGame.Patterns* holds the pattern files, created with *Edit*. These create named patterns which placed enemies follow.

- *DemoGame.Scenery* holds the scenery sprites, created with *Paint*.

- *DemoGame.Sprites* holds the enemy sprites, also created with *Paint*.



# PINEAPPLE

# SOFTWARE

## The Pineapple Colour Digitiser

Since we originally introduced the Pineapple Video Digitiser over two years ago we have not needed to modify the design of the hardware in any respects. However, the software has been continually improved to the point where the quality and quantity of software supplied is second to none.

Now, because of the large number of sales, we are able to offer a big price reduction which makes high quality colour digitising available to everybody. Also, because we are so confident that you will find the Pineapple Digitiser superior to anything else available, we offer a full no questions asked money back guarantee.

Some of the features of the Pineapple Digitiser, many of which are still exclusive are as follows:-

- \* 16 Bit true RGB storage in 256k Ram
- \* Sequences of frames of a moving picture can be grabbed and stored in memory. Up to 30 frames in a 1Mb computer, 200-300 frames with more memory! A special replay option allows replaying of previously grabbed sequences even while watching a current live input picture.
- \* Full screen area normally seen on a TV set is grabbed in full
- \* Images may be processed using our own high speed software routines or by using Acorn's ChangeFSI software
- \* Quite simply the most powerful and easily used zooming and cropping routines available with any processing package
- \* Two independent multitasking applications supplied. Non-multitasking software allows digitising without windows for adding still images to videos
- \* Our hardware does not use interrupts so other applications run at full speed
- \* Hard locking synchronising circuits for best results from video recorders
- \* Available in stand alone box for use with A3000. In this mode it can be used with A300/400/500 series computers only occupying one expansion slot
- \* Full money back guarantee

**A300/400/500 £199.00 +vat**

**A3000/Boxed £235.00 +vat**

!!! Coming soon - adapter for A3010, A3020 & A4000 !!!

## WARNING!! VIRUS

Your computer could be infected with any of the following viruses. **!KILLER will detect and remove them painlessly!**

Aprilfool	Archie	Arcubus	BBCeconet
Bigfoot	BooHoo	Breakfast	CeBIT
Code	Ex_port	Extend	ExtendV2
Funky	Garfield_1	Garfield_W	Handler
Icon	Image	Increment	Irafix
Link	Mode87	Module	MyMod
NetManager	NetStatus	Parasite	Penicillin
Rinopt	Sprite	SpriteUtils	Taskmanager
T2	Terminator	Thanatos	Traphandler
Valid	Vigay		



Because we are discovering new viruses all the time we have based the scheme on a yearly subscription which will provide 3-4 updates during a year. An immediate update will be sent out if a particularly nasty virus is discovered.

**Don't wait until you discover you have a virus!!**  
**One years subscription costs just £24.00 + vat**

Low cost school and county licences available



**39, BROWNLEA GARDENS, ILFORD, ESSEX, IG3 9NL**

Add 17.5% vat

**Tel 081 599 1476**

**Fax 081 598 2343**

P&P Free

Barclaycard  
**VISA**

## Part Exchange

your BBC, Master 128, A3000 or Archimedes 300/400 for a new

**A4000, A5000 or A4**

The table below shows examples of the balance you can expect to pay when part exchanging your old system, but please fone first to confirm

	BBC B	Master	A3000	A440/1 Monitor Monitor
A4000HD80 System	849	774	574	299
A5000HD80 System	1249	1199	949	699
A4 4MHD60 System	1499	1449	1199	949

Learning Curve, Home Office and HD120 systems also available

### Clearance Offers

Laser Direct LPB4	£845.00
Cumana CD358	£ 89.00
Cumana CDX200	£115.00
Microvitec 1451MS	£165.00
Star LC24-10	£125.00
Panasonic KXP1081	£ 89.00

### Second Hand Equipment

BBC B	£65.00
Master 128	£175.00
A3000	£300.00
A400 from	£400.00
A310 from	£300.00
Monitor from	£80.00

**AJS**

**Computers Ltd**

51 Heath Drive  
Chelmsford  
Essex CM2 9HE  
tel 0245 345263  
fax 0245 345233

All prices plus VAT and carriage

**NEW**

A3010 Family Solution  
A3010 Learning Curve  
A4000 Home Office  
A5000 Learning Curve  
A4 Portable  
Acorn Pocket Book

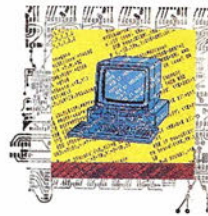
*If it's made **by** Acorn Computers  
or it's made **for** Acorn computers,*

**THE DATA STORE**  
*can help.*

We're stocking all the new Acorn models to go with the vast selection of peripherals and software on our shelves.

**TRY BEFORE YOU BUY IN OUR  
ATTRACTIVE SHOWROOM**

6 CHATTERTON ROAD BROMLEY KENT  
Tel: 081-460 8991 Fax 081-313 0400



To start this month, just a few cautionary notes about writing recursive routines in Arm code. If you don't know what a recursive routine is, you have my full permission to skip this bit and join us again later on.

Recursion in Basic is relatively straightforward to use, as long as you can think straight about what you are trying to do. The listings *Basic1* and *Basic2* illustrate two simple uses of recursion. The first plots the commonly-sighted 'Persian carpet' pattern and the second sorts a list of numbers into order using the quicksort method.

Fairly obviously, if you were to translate either of these into Arm code, you'd have to be quite careful as to where and how you stacked your registers. Basic has 'implied' local variables so that even though a call to PROCsquare has been made with  $x-s$ ,  $y-s$ ,  $s/2$ ,  $c-1$ , which get assigned to  $x$ ,  $y$ ,  $s$  and  $c$ , the 'original'  $x$ ,  $y$ ,  $s$  and  $c$  are left untouched and ready for the next call to PROCsquare. A similar process happens in the quicksort routine with the variables *from* and *to*. The Arm knows nothing about this sort of carry on, so you have to build it in when you write your routines.

As it happens, I have already converted both of these programs and the results can be seen in *Arm1* and *Arm2*. Looking at *Arm1* to start with, you should first notice that all the parameters  $x$ ,  $y$ ,  $s$ ,  $c$  along with a currently mysterious register  $s2$  and the link register are stacked; the last so we can either return to the previous level of recursion or escape back to Basic after the plot.

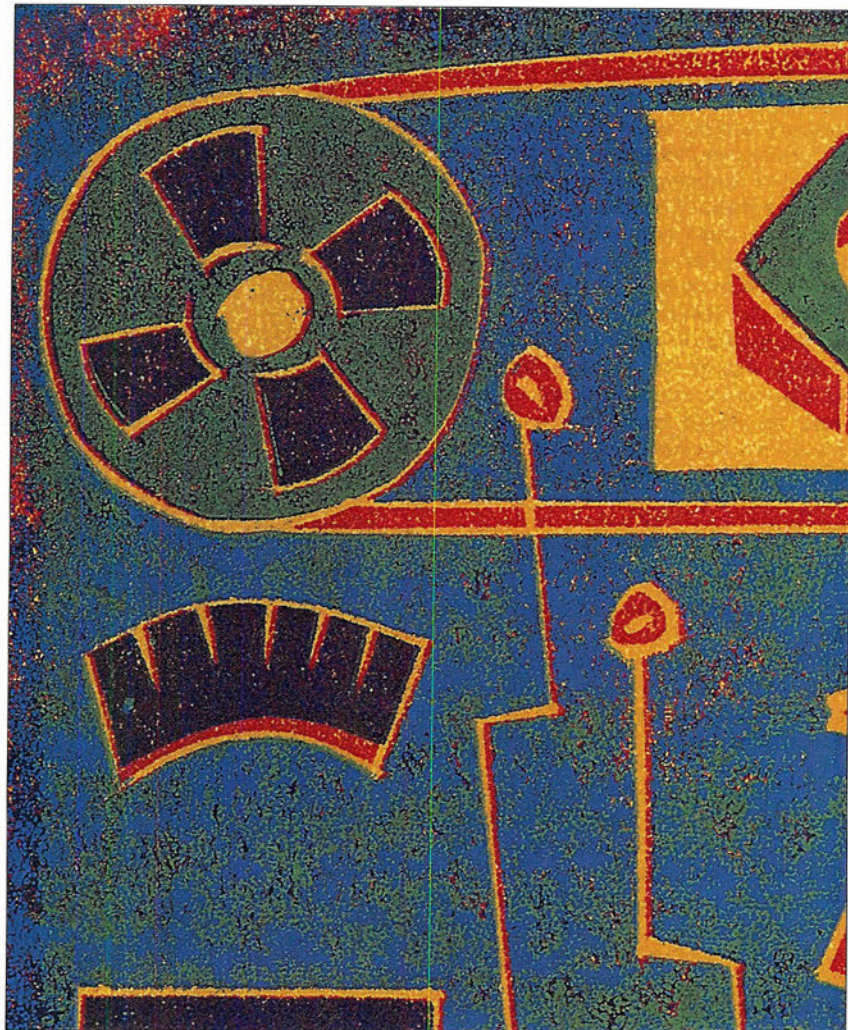
As we have no means of writing a PROCedure call complete with calculated parameters in Arm code, the four calls to PROCsquare are not straight-forward to convert. In each,  $s$  has always been halved, and  $c$  is always decremented by 1; only the new  $x$  and  $y$  differ in each one. As these parameters for this level of recursion are safely on the stack, we can actually do what we want with the copies still in the registers. We therefore halve  $s$  and decrement  $c$  immediately; you will note however that we take a copy of  $s$  into  $s2$  before it is halved. The reason for this should become apparent.

We are now ready to recurse. The  $x$  and  $y$  of the first square are calculated by subtracting the original  $s$  – meaning  $s2$  now – from the current  $x$  and  $y$ . Since  $s$  and  $c$  have been set up, we just need to BL square. We know that calling square preserves all the registers, so, on return from BL square we know  $x$ ,  $y$ ,  $s$ ,  $c$  and  $s2$  are the same as before the call.

To plot the next square, we just need to calculate a new  $x$  coordinate. We could retrieve the original  $x$  and  $y$  from the stack and ADD  $x,x,s2$  and SUB  $y,y,s2$  but there is an easier way – we can simply add  $2 \times s2$  to  $x$ . The final two squares proceed in a similar way.

Before leaving the routine we need to actually plot the square. The original values of  $x$ ,  $y$ ,  $s$  and  $c$  are retrieved from the stack, but note that there is no '!', meaning write-back is not used so that the stack pointer remains unchanged. VDU 18 is used to set the GCOL and a pair of OS\_Plot's are used to draw the rectangle.

All the examples to date in this series have been quick to run and we've never had cause to want to escape from one. This program,



# ASSEMBLY LINE

Dave Lawrence  
explains how to  
use recursion to  
get some very  
special effects

however, may take some time to run. If you have a multiscan monitor, you can change the CMP  $s,\#4$  to a CMP  $s,\#2$  to produce a finer pattern. If you then run this program on a machine fitted with anything less than an Arm3, you may be drumming your fingers. Detecting the ESCAPE key is not a problem. Using the 'magic' SWI call OS\_ReadEscapeState is all you need to do. This returns with the carry flag set if an ESCAPE is pending. In a normal (meaning a non-recur-

sive) program you'd just jump to a suitable exit point or even simpler, you may use something like LDMCSFD (sp)!, {pc} to return to Basic.

Unfortunately, as the stack is being used constantly by the recursion, this would, at best, only return you one level back up the recursion and that's assuming that you're only stacking the return address. In *Arm1* this would load the PC with the last x position; not very useful. The simplest way out of this problem is to use the system used by *Arm1*.

When the code is first entered – at .dosquare – the link register is stacked and then, before the recursive part of the code is called, the current stack pointer is stored somewhere in memory. Then, no matter where in the recursion the plotting has reached, it can simply restore the stack pointer by loading it from that address and then pulling the original PC value off the original stack.

## QUICKSORT

The Arm implementation of the quicksort example is slightly different in the way it stacks its variables. If you take a look at the start of the main sort code (.quick\_sort) it stacks only the return address; no other variables at all. The two search loops are then performed to roughly sort out the data.

The recursion happens in the last couple of blocks of code. As there is nothing else to do after these two calls, we can afford to be a little more blasé with our stacking. We know that quick\_sort does not preserve any of the registers, so we must stack the ones we will need for the second recursive call to quick\_sort. A quick glance at the Basic listing shows that we will need b, from and to.

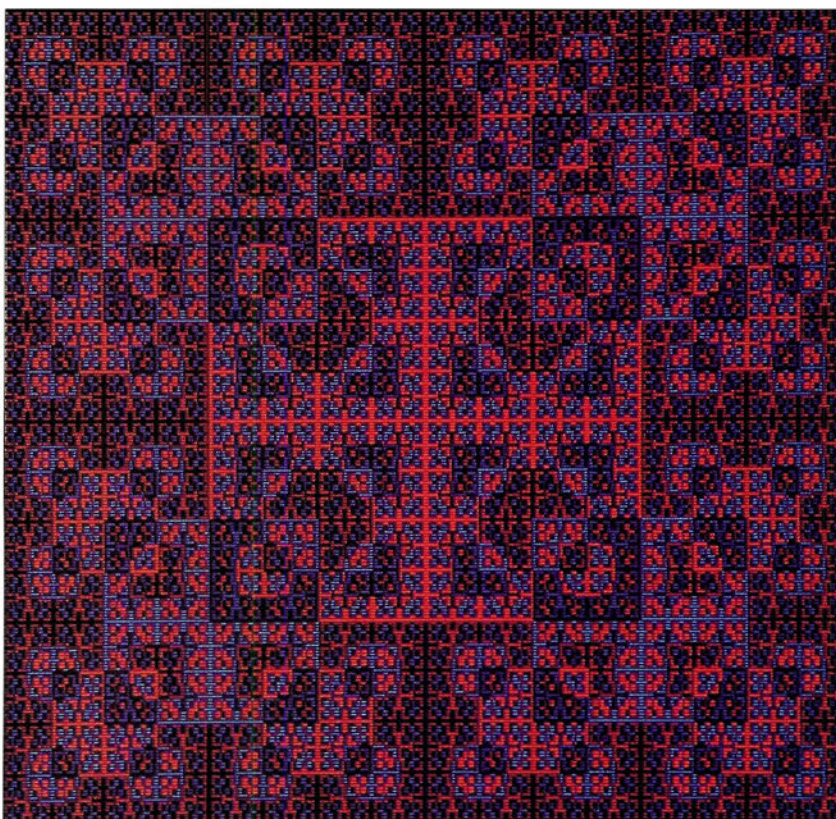
So, those are the ones we stack before the first call. On return from this call they are pulled back off ready for the second call. In this case, we are actually saving quite a bit of time by doing it this way. If we stacked these registers each time quick\_sort was called we'd double the amount of stacking commands.

Recursion is a frightfully cunning programming technique. It maybe a little daunting at first, but a steady head and a cool hand are all that's needed. When programming in Arm, it's quite easy to go into mind-warp when trying to recurse successfully, so let's be careful out there!

## BLIMEY, THAT'S GOOD

As promised last time, I'll finish off this month with an exceedingly handy little routine I knocked up over the weekend. The program *Debug* is designed to be part of a library and can be installed by adding the line LIBRARY "%Debug" near the start of your program. It needs a small amount of code space to assemble into, so make sure you DIM enough and include the line PROCassemble\_debug somewhere inside your assembly loop. I normally put it just before the NEXT.

I always use the variable pass for my two passes, and therefore *Debug* has a couple of OPT pass instructions. If you use some other control variable, then these should be changed. Once this has been done, *Debug* provides you with FNdebug(string\$). At its simplest, this can be



Recursion is used to lay down this elegant 'Persian carpet'; see how fast it runs in Arm code

used for printing strings, and is therefore equivalent to the OS\_WriteS SWI call. However, with the cunning use of the '\ ' character, it comes into a world of its own, the sequence \n\ is translated into carriage return + linefeed (meaning Ascii 10 and 13). Any other string between a pair of '\ 's is treated as a register number and its value is printed.

Registers can be specified by their number, for example \2\ for R2 or any EVAL-able string (usually its name). This therefore allows you to use \read\ (assuming read has been aliased). Register values will be printed in decimal by default. Prefixing the number – or name – with a '&' will print the value in hex, and a '%' will print the eight-bit binary value of the lowest byte of the register. There is space available for a further five dump formats as things stand, but these three are really the only ones I've ever needed to use.

## USING DEBUG

To include some debug text in your program just make a call to FNdebug. This assembles a branch with link to the actual debug code and stores a coded version of the debug string immediately following the branch. An ALIGN instruction is included to ensure the rest of the code is assembled correctly.

The debug code itself preserves all registers – so you can put debug code wherever you want – and returns properly the instruction after the ALIGN. Try adding *Debug* to *Arm2* and inserting the line . . .

```
FNdebug("\from\ -> \to\n")
```

. . . after the STMFD following .quick\_sort; you'll see it display the ranges of elements that it's sorting. As usual, all of the programs in this article can be found on the yellow pages.

# Serenade

## YOUR OWN 16 TRACK MIDI RECORDING STUDIO



Serenade is a desktop MIDI sequencer for the full range of Acorn RISC OS machines. A great deal of effort has gone into creating a graphical user interface that gives access to the power of Serenade without making it complex to use.

■ Multi tasking 16 track MIDI sequencer ■ Fully RISC OS 2 & 3 Compliant and 1 megabyte friendly ■ Auto start and syncing of Rhythm-Bed from Serenade ■ Auto drop feature allows you to insert notes in real time whilst replaying ■ Guitar window allows chord input offering an alternative to the standard keyboard - it will recognise most common chords (majors, minors, 7ths, etc..) ■ Scores to Rhapsody via Standard MIDI file format type 1 ■ Can generate Real Time MIDI Events enabling real time mixing, panning, record etc with convenient snapshot facility ■ Audition feature allows undo of most functions **Price £ 135.00 inc VAT**

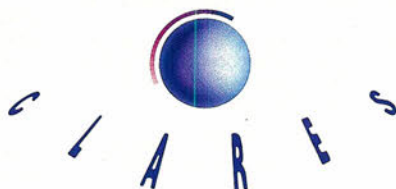


**RHYTHM BED - A MIDI DRUM MACHINE** - Rhythm bed is a program which allows you to create percussion tracks for controlling drum machines directly or for export to sequencers, such as Serenade. For those without access to a MIDI system, Rhythm-Bed can access up to eight separate internal sounds.

■ Fully RISC OS 2 & 3 Compliant and 1 megabyte friendly ■ Auto start and syncing of Rhythm-Bed from Serenade ■ Compatible with a range of MIDI keyboards and drum machines ■ Very easy to use grid based entry method ■ Data can be saved as a MIDI file for export to packages such as Rhapsody and Serenade ■ Sequencing facility so you can build up a long rhythm from short patterns **Price £ 49.95 inc VAT**

*The best drum editor I've ever seen on any platform - Acorn User Feb 93*

Send or ring for a more detailed leaflet and ask for your free demo disk



We accept Access and Visa.

98 Middlewich Road, Rudheath, Northwich, CHESHIRE CW9 7DA. Telephone: 0606 48511 Fax No: 0606 48512

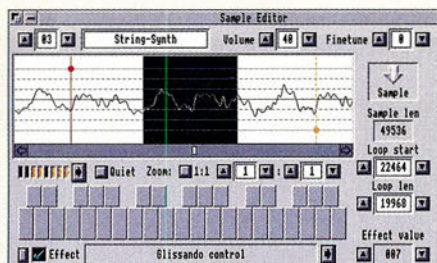
# Digital Symphony

The Soundtrack Editor offering

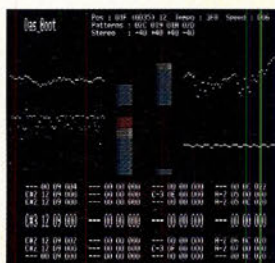
## Unrivalled Power

and without doubt the most

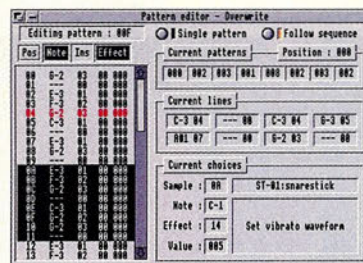
## Advanced Features



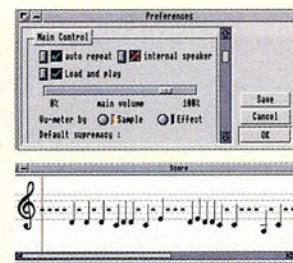
Built in Sample editor, allows you to Cut and Paste parts of the sample. You can try out any of the 40 different special effects, and define a repeat loop by dragging visual markers.



Powerful, deadily accurate, Realtime Monitor, displays Digital Score Data, Vu Bars and Instrument Waveforms.



The Pattern Editor, used in conjunction with the Musical Notation score display, makes editing a track very easy. Once created each pattern can be slotted into the sequence, wherever you wish. Cut and Paste, Copy, Transpose, Exchange, etc... facilities are offered to enhance flexibility.



Perfect ProTracker Implementation • MIDI Compatible  
Compressed Saving • 4096 Patterns • Score Display  
Maestro Conversion • 40 Special Effects  
100% ARM Code • OctaMED Import

# £49.95 INC

Upgrade from Tracker,  
and Save 20%. Phone for details.



# Oregon

DEVELOPMENTS

Oregon Software Developments  
36 Grosvenor Avenue, Streetly,  
Sutton Coldfield, B74 3PE.  
Tel: 021 353 6044

Send a Formatted disc, and a 1st class Stamp,  
for a Free Demo copy of either Package.

# Archivist

# £29.95 INC

Cards are created with the Designer part of the package, a new form can be designed simply by selecting fields, and dragging them to their required position.

Text, Integer, & Real field types can be set, in addition to multiple format Date fields, and Formula fields with user definable equations.

Alterations, for example - extra fields can be added to a card, even if you have started inputting data, and no data will be lost.

Archivist is able to store and display or play Textfiles, Sprites, Drawfiles, Maestros, Samples and Soundtracks.

Archivist can be interrogated using either of two search routines, Easy Search gives you a duplicate copy of the card, you type the variable to be searched for in the appropriate field, and Archivist does the rest.

For those requiring a little more flexibility, a complex search equation can be built up using mathematical, and Basic Operands.

Of course, Archivist also provides a Search and Replace facility, plus a fast Primary & Secondary Sort routine.

A Clipboard, allowing cut and paste operations, and a user definable Quick Entry routine, speeds up data entry into Archivist considerably.

Card Print allows printing of cards in WYSIWYG format, using of course the standard Outline fonts. (2 supplied)

Reports generator, allows your data to be presented in a tabular form. Archivist also has a specifically designed Label Printer for your Names and Addresses files.

Archivist files are saved compressed to save valuable disc space, and with a Password for privacy if required.

Archivist can automatically produce CSV files, with the option to create Graphbox headers. Also it is possible to save data as a textfile for export to DTP's etc.

Statistics window displays the Averages, Minimums, Maximums and Totals of each field for the entire database.

Archivist is able to Import files from many existing databases, on the Archimedes, as well as the BBC and PC.

Existing Version 2 users can upgrade to Version 4.70 for just £5, when returning the original disc.

Powerful Databases

# YELLOW PAGES

Free programs for you to type in and use

## HOW TO ENTER THE PROGRAMS

This section describes how to enter and use the more complicated programs in the yellow pages. A lot of the explanations mention the CSD: for more details on the Currently Selected Directory, see the box below.

### \*INFO (page 69)

#### Info3 - Info5

Type in *RMSaveS* and save it. Double-click on *RMSaveS* to save a utility program called *RMSave* in the CSD, so set the CSD to the directory where you wish to save *RMSave*. This utility can then be used as described in \*INFO.

*PatchPin* should be saved into the same directory as the Pinboard module. Set this directory as the CSD and double-click on *PatchPin*. This will save a module called *NewPin* in the CSD. Double-click on *NewPin* to load the patched Pinboard.

*SaveSprs* saves the Rom sprites in the CSD. It is only really required for Risc OS 2, as the file it saves is the same as *Resources:\$.Resources.Wimp.Sprites* in Risc OS 3.

#### Info11 & Info12

Create a directory called *!Auto*, and save both listings inside this (double-click on *!Auto* while holding down SHIFT to open the directory). Set the CSD to *!Auto*, and double-click on *AutoDat*. This will create four files inside *!Auto* (*!Boot*, *!Run*, *!RunImage* and *!Sprites*). The *Auto* application is now complete.

### Info13 & Info14

Save both *Monkey1* and *Monkey2* on the same disc, and CHAIN "Monkey1" to start. *Monkey1* will run *Monkey2* automatically.

### BIO LOGICALLY (page 79)

#### Bio1 - Bio4

These four programs need to be saved inside the *Bio* application, as listed in February '93. To open up the Bio library directory, double-click on *!Bio* while holding down SHIFT, and then double-click on *Library*. Now create two directories, one called *HexDump*, and one called *ToneDial*.

Save the programs *HexDump* and *Hex\_Dat* inside *HexDump*, and save *ToneDial* and *Tone\_Dat* inside *ToneDial*. Next, open up *HexDump* and set it as the CSD. Then double-click on *Hex\_Dat* to create the files *Sprites* and *Templates*, and finally delete *Hex\_Dat*. Repeat the process for *ToneDial* (i.e. set the CSD to *ToneDial* and run and delete *Tone\_Dat*). Now the *Bio* application will run the two new modules automatically.

### Setting the Currently Selected Directory (CSD)

Some of the explanations above require the CSD to be set to a certain directory for them to work. To do this, you must first create an Obey file (using Edit), containing just the following line:

**Dir <Obey\$Dir>**

Next save it under the name *ThisDir* in the directory you wish to set as the CSD. Finally, double-click on *ThisDir* to set the CSD to that directory.

## COMPATIBILITY CHART

Use this chart to check if a program will work on your machine. There are two columns, one for eight-bit machines like the Model B and Master 128, and one for 32-bit machines, like the A3000, A400 or A3010. If there is a star for the program in the column then it will work on your machine. Special exceptions and hardware requirements are listed as foot notes at the end of the table.

Article	Program Name	8-bit	32-bit
*INFO (page 69)			
Info1	<i>Lorenzo</i>	*	*
Info2	<i>Ribbon</i>	*	*
Info3	<i>RMSaveS</i>	*	*
Info4	<i>PatchPin</i>	*	*
Info5	<i>SaveSprs</i>	*	*
Info6	<i>3DGraph/1</i>	*	*
Info7	<i>Newton/1</i>	*	*
Info8	<i>Dots</i>	*	*
Info9	<i>IntSort</i>	*	*
Info10	<i>FracSort</i>	*	*
Info11	<i>!RunImage</i>	*	*
Info12	<i>AutoDat</i>	*	*

Info13	<i>Monkey1</i>	*
Info14	<i>Monkey2</i>	*
Info15	<i>Why?</i>	*
Info16	<i>SprDemo6</i>	*
Info17	<i>SprDemo7</i>	*
Info18	<i>SprDemo8</i>	*
Info19	<i>SprDemo9</i>	*

### BIO LOGICALLY (page 79)

Bio1	<i>HexDump</i>	*
Bio2	<i>Hex_Dat</i>	*
Bio3	<i>ToneDial</i>	*
Bio4	<i>Tone_Dat</i>	*

### MOVING TARGETS (page 82)

<i>GameDes1</i>	<i>AlienEd2</i>	*
<i>GameDes2</i>	<i>Populate</i>	*

### ASSEMBLY LINE (page 85)

<i>Arm1</i>	<i>Basic1</i>	*
<i>Arm2</i>	<i>Basic2</i>	*
<i>Arm3</i>	<i>Arm1</i>	*
<i>Arm4</i>	<i>Arm2</i>	*
<i>Arm5</i>	<i>Debug</i>	*

## Listing Info1

```

10 REM >Lorenzo (Info1)
20 REM By Jan Vlietinck
30 REM For 32-bit machines
40 REM (c) BAU April 1993
50 :
60 MODE 13
70 OFF
80 PROCass
90 PROCmain
100 END
110 :
120 DEF PROCmain
130 m=2^22
140 REPEAT
150 x=(10+RND(200)-50)*m
160 y=(10+RND(50))*m
170 z=(100+RND(100))*m
180 FOR i=0 TO 300
190 table!(12*i)=x
200 table!(12*i+4)=y
210 table!(12*i+8)=z
220 NEXT
230 table!(12*i)=1<<31
240 table!(12*i+4)=1<<31
250 table!(12*i+8)=1<<31
260 CLS
270 CALL begin
280 UNTIL FALSE
290 ENDPROC
300 :
310 DEF PROCcoltable(ctable)
320 swp=2
330 c=0
340 m=15
350 FOR k=0 TO m
360 PROCput(c+(k AND %100)*5.25,k AND
D %11)
370 NEXT
380 FOR t=1 TO 3
390 c=t
400 m=4*(4-t)-1
410 PROCside(4)
420 PROCside(-1)
430 PROCside(16)
440 PROCside(-4)
450 PROCside(1)
460 PROCside(-16)
470 NEXT
480 ENDPROC
490 :
500 DEF PROCside(rgb)
510 FOR i=1 TO t
520 c=rgb
530 IF swp=1 THEN
540 FOR k=0 TO m
550 PROCput(c+(k AND %100)*5.25,k
AND %11)
560 NEXT
570 ELSE
580 FOR k=m TO 0 STEP -1
590 PROCput(c+(k AND %100)*5.25,k
AND %11)
600 NEXT
610 ENDP
620 swp=swp XOR 3
630 NEXT
640 ENDPROC
650 :
660 DEF PROCput(c,t)
670 b1=(c>5) AND 1
680 b2=(c>4) AND 1
690 g1=(c>3) AND 1
700 g2=(c>2) AND 1
710 r1=(c>1) AND 1
720 r2=(c>0) AND 1
730 col=t+4*(r2+2*(b2+2*(r1+2*(g2+2*(g
1+2*b1))))))
740 ?ctable=col
750 ctable+=1
760 ENDPROC
770 :
780 DEF PROCass
790 DIM ctable 256
800 PROCcoltable(ctable)
810 DIM Q% 1000
820 DIM table 13*1000
830 x=0:y=1:z=2:a=3:b=4:c=5
840 t=6:sc=7:tel=8
850 u=9:v=10:w=11
860 tab=12:col=14
870 FOR p=0 TO 2 STEP 2
880 P%Q%
890 [OPT p
900 .scrd EQU0 148
910 EQU0 -1
920 .screen EQU0 0
930 .tabd EQU0 table
940 .teld EQU0 105<<6
950 .ct EQU0 ctable
960 :
970 .begin STMPD r13!,r14 )
980 ADR r0,scrd
990 ADR r1,screen
1000 SWI "OS_ReadVduVariabl
es"
1010 LDR sc,screen
1020 ADD sc,sc,%40*128
1030 ADD sc,sc,%160
1040 LDR tel,teld
1050 ADD tel,tel,%1
1060 STR tel,teld
1070 .loop1 LDR tab,tabd
1080 LDR col,ct
1090 MOV t,tel,ASR #6
1100 AND t,t,%255
1110 LDRB col,col,t
1120 .loop2 LDMIA tab,(x,y,z)

```

```

1130 CMP x,%1<<31
1140 BEQ skip
1150 MOV u,x,ASR #16
1160 MOV v,y,ASR #16
1170 MOV w,z,ASR #16
1180 SUB a,v,u
1190 ADD a,a,LSL #2
1200 RSB b,w,%28<<9
1210 MUL b,u,b
1220 RSB b,v,b,ASR #9
1230 MUL c,u,v
1240 MOV c,c,ASR #9
1250 SUB c,c,w,LSL #1
1260 ADD x,x,a,ASL #8
1270 ADD y,y,b,ASL #7
1280 ADD z,z,c,ASL #7
1290 ADD t,u,v
1300 MOV a,t,ASR #7
1310 ADD t,w,v,ASL #1
1320 MOV b,t,ASR #7
1330 ADD t,b,b,LSL #2
1340 ADD t,t,t,LSL #6
1350 ADD t,t,sc
1360 STRB col,t
1370 STRB col,t,%1
1380 STRB col,t,%8-1
1390 STRB col,t,%320
1400 STRB col,t,%320
1410 LDR t,tabd
1420 CMP t,tab
1430 BEQ eki
1440 SUB tab,tab,%12
1450 LDMIA (tab),{a,b,c}
1460 SUB t,a,x
1470 ADD x,x,t,ASR #4
1480 SUB t,b,y
1490 ADD y,y,t,ASR #4
1500 SUB t,c,z
1510 ADD t,t,%400<<7
1520 ADD z,z,t,ASR #4
1530 .ski STMIA (tab),{x,y,z}
1540 B loop2
1550 .skip ADD tel,tel,%1
1560 SWI "OS_ReadEscapeStat
e"
1570 LDMCSPD r13!,{pc }
1580 SWI "OS_Mouse"
1590 CMP r2,%0
1600 BEQ loop1
1610 .wait SWI "OS_Mouse"
1620 CMP r2,%0
1630 BNE wait
1640 LDMFD r13!,{pc }
1650 :
1660 NEXT
1670 ENDPROC

```

## Listing Info2

```

10 REM >Ribbon (Info2)
20 REM By Jan Vlietinck
30 REM For 32-bit machines
40 REM (c) BAU April 1993
50 :
60 MODE 13
70 OFF
80 PROCass
90 MOUSE ON
100 REPEAT
110 A%=(160-100+RND(200))<<4
120 B%=(128-100+RND(200))<<4
130 B%=(128-100+RND(200))<<4:REM140<<
4
140 C%=RND(1)*256*10-512
150 D%0
160 CALL set
170 CALL begin
180 WAIT
190 CLS
200 UNTIL FALSE
210 END
220 :
230 DEF PROCass
240 DIM table 4*4096
250 m=256*256
260 ttable=10
270 FOR i=1 TO 4096
280 table!(4*i)=m/(i+10)
290 NEXT
300 x1=70<<4
310 y1=80<<4
320 x2=250<<4
330 y2=80<<4
340 x3=160<<4
350 y3=190<<4
360 x=0:y=1:vx=2:vy=3
370 a=4:b=5:t=6:tab=7
380 scr=8:col=9:cnt=10
390 DIM Q% 1000
400 FOR pass=0 TO 2 STEP 2
410 P%Q%
420 [OPT pass
430 .tabd EQU0 table
440 .scrd EQU0 148
450 EQU0 -1
460 .screen EQU0 0
470 :
480 .set ADR r0,scrd
490 ADR r1,screen
500 SWI "OS_ReadVduVariabl
es"
510 MOV pc,R14
520 :
530 .kol EQU0 100<<11
540 .begin LDR tab,tabd
550 LDR scr,screen
560 LDR scr,scr,%640
580 MOV col,%255

```

```

590 LDR cnt,kol
600 .loop RSB a,x,%x1
610 RSB b,y,%y1
620 MUL t,a,a
630 MLA t,b,b,t
640 MOV t,t,LSR #14
650 LDR t,[tab,t,LSL #2]
660 MUL a,t,a
670 MOV a,a,ASR #14
680 MUL b,t,b
690 MOV b,b,ASR #14
700 ADD vx,vx,a
710 ADD vy,vy,b
720 RSB b,y,%y2
730 MUL t,a,a
740 MLA t,b,b,t
750 MOV t,t,LSR #14
760 LDR t,[tab,t,LSL #2]
770 MUL a,t,a
780 MOV a,a,ASR #14
790 MUL b,t,b
800 MOV b,b,ASR #14
810 ADD vx,vx,a
820 ADD vy,vy,b
830 RSB a,x,%x3
840 RSB b,y,%y3
850 MUL t,a,a
860 MLA t,b,b,t
870 MOV t,t,LSR #14
880 LDR t,[tab,t,LSL #2]
890 MUL a,t,a
900 MOV a,a,ASR #14
910 MUL b,t,b
920 MOV b,b,ASR #14
930 ADD vx,vx,a
940 ADD vy,vy,b
950 ADD x,x,vx,ASR #10
960 ADD y,y,vy,ASR #10
970 MOV a,x,ASR #4
980 MOV b,y,ASR #4
990 ADD t,b,b,LSL #2
1000 ADD t,a,t,LSL #6
1010 CMP t,%320*256
1020 ADD t,t,scr
1030 STRB col,t
1040 STRB col,t,%1
1050 STRB col,t,%42
1060 STRB col,t,%43
1070 STRB col,t,%44
1080 STRB col,t,%45
1090 STRB col,t,%46
1100 STRB col,t,%47
1110 STRB col,t,%48
1120 STRB col,t,%49
1130 STRB col,t,%50
1140 STRB col,t,%51
1150 STRB col,t,%52
1160 STRB col,t,%53
1170 MOV col,%0
1180 STRB col,t,%54
1190 STRB col,t,%55
1200 ADD cnt,cnt,%1
1210 MOV col,cnt,LSR #11
1220 ORR col,col,%16
1230 STMPD 13!,{0-3 }
1240 SWI "OS_ReadEscapeStat
e"
1250 LDMCSPD r13!,{pc }
1260 SWI "OS_Mouse"
1270 CMP r2,%0
1280 LDMFD 13!,{0-3 }
1290 BEQ loop
1300 .wait SWI "OS_Mouse"
1310 CMP r2,%0
1320 BNE wait
1330 STR cnt,kol
1340 MOV pc,R14
1350 :
1360 NEXT
1370 ENDPROC

```

## Listing Info3

```

10 REM >RMSaveS (Info3)
20 REM By DL & DA
30 REM For 32-bit machines
40 REM (c) BAU April 1993
50 :
60 DIM code 400
70 sp=13:link=14:pc=15
80 FOR pass=0 TO 2 STEP 2:P%code
90 [OPT pass
100 STMPD (sp),{r0-r7 ,link}
110 :
120 MOV R6,R1
130 :
140 LDRB R0,[R6]
150 CMP R0,%32
160 ADRLT R0,syntax
170 BLT exit_error
180 :
190 .skipword
200 LDRB R0,[R6]
210 CMP R0,%32
220 ADDGT R6,R6,%1
230 BGT skipword
240 MOVLt R6,R1
250 :
260 .skipspaces
270 LDRB R0,[R6]
280 CMP R0,%32
290 ADDGT R6,R6,%1
300 BEQ skipspaces
310 MOVLt R6,R1
320 :
330 MOV R0,%18
340 SWI "XOS_Module"
350 BVS exit_error
360 :

```

```

370 MOV R0,%10
380 MOV R1,R6
390 LDR R2,type
400 LDR R5,[R3,%-4]
410 MOV R4,R3
420 ADD R5,R4,R5
430 MOV R3,%0
440 SWI "XOS_File"
450 BVS exit_error
460 :
470 .exit_save
480 LDMFD (sp),{r0-r7 ,pc}
490 :
500 .exit_error
510 STR R0,[sp]
520 LDMFD (sp),{r0-r7 ,link}
530 ORRS pc,link,%1<<28
540 :
550 .type EQU0 &FFA
560 .syntax
570 EQU0 220
580 EQU0 "Syntax: *RMSave <mod
ule> [<filename>]"
590 EQU0 13
600 EQU0 0
610 ]NEXT
620 SYS "OS_File",10,"%RMSave",&FFC,,
code,P%

```

## Listing Info4

```

10 REM >PatchPin (Info4)
20 REM By DL & DA
30 REM For 32-bit machines
40 REM (c) BAU April 1993
50 :
60 DIM block 20000
70 SYS "OS_File",&FF,"Pinboard",block
TO ,,,,len
80 :
90 valid$=FNzero(block+%9D4)
100 help$=(block+block!%2AC)
110 syntax$=FNzero(block+block!%2A8)
120 synend$=""
130 WHILE RIGHT$(syntax,1)<" "
140 synend$=RIGHT$(syntax,1)+synend$
150 syntax$=LEFT$(syntax)
160 ENDWHILE
170 :
180 FOR pass=0 TO 2 STEP 2
190 P%block+len
200 [OPT pass
210 .newbackdrop
220 STMPD R13!,r14 )
230 MOV R1,R0
240 ADR R0,valid
250 ADD R2,R1,%450
260 MOV R3,%100
270 SWI "XOS_ReadArgs"
280 LDMVSPD R13!,{pc }
290 LDR R0,[R2,%20]
300 CMP R0,%0
310 LDRBNE R0,[R0,%1]
320 ANDNE R0,R0,%15
330 ORRNE R0,R0,%60
340 STRBNE R0,bcol
350 LDMFD R13!,{pc }
360 :
370 .bcol
380 EQU0 &84
390 :
400 .getcolour
410 LDRB R0,bcol
420 MOV PC,R14
430 :
440 .valid
450 EQU0 valid$+"B=Background/e"
460 EQU0 0
470 ALIGN
480 :
490 .newhelp
500 EQU0 LEFT$(help$)
510 EQU0 " and allows the desktop c
olour to be changed."
520 EQU0 13
530 .newsyntax
540 EQU0 syntax$+"[-Background <col
our>]"
550 EQU0 synend$
560 EQU0 0
570 ALIGN
580 :
590 ]NEXT
600 end=P%
610 :
620 REM Patch original *Backdrop comma
nd
630 REM to point to new decode routine
640 REM that deals with -Background
650 REM
660 P%block+%8A0
670 [OPT 2
680 MOV R0,R0
690 MOV R0,R0
700 MOV R0,R0
710 MOV R0,R0
720 BL newbackdrop
730 :
740 :
750 REM Patch the two Wimp_SetColour c
alls
760 REM to use the colour given
770 REM
780 P%block+%E10
790 [OPT 2
800 BLNE getcolour
810 :
820 P%block+%24E8
830 [OPT 2

```

```

840 BL getcolour
850 ]
860 :
870 REM Patch *command table to allow
up
880 REM to four parameters to *Backdro
p
890 REM and point to new help and synt
ax
900 REM
910 block!&2A4=&040100
920 block!&2A8=newsyntax-block
930 block!&2AC=newhelp-block
940 :
950 SYS "OS_File",10,"NewPin",&FFA,,bl
ock,end
960 END
970 :
980 DEF FNzero(z)
990 z$=""
1000 WHILE ?z<>0
1010 z$=CHR$(?z)
1020 ?z+=1
1030 ENDOHILE
1040 =z$

```

## Listing Info5

```

10 REM >SaveSprs (Info5)
20 REM By DL & DA
30 REM For 32-bit machines
40 REM (c) BAU April 1993
50 :
60 SYS "Wimp_BaseOfSprites" TO rom,ra
m
70 SYS "OS_SpriteOp",&10C,rom,"ROMspr
s"

```

## Listing Info6

```

10 REM >3DGraph/1 (Info6)
20 REM By Alistair Brown
30 REM For 32-bit machines
40 REM (c) BAU April 1993
50 :
60 MODR0:=VDU19,0,7,0,19,1,0,0;:=
25:FORC=-15TO15STEP.25:FORZ=-500TO500:FORx=
1670-168STEP-.25:e=40/(40-z):a=SQR(c^2+z^
2)+1R-10:y=6*SINA/a-12:y*y/e:=f*(y-z)
)-f*(y-c):g=y*(y-c)-g*(y-g):p=(y-f OR
y-g)*PIOT69,(c*e+640)*p,(y*a+712)*p:NE
XT:NEXT

```

## Listing Info7

```

10 REM >Newton/1 (Info7)
20 REM By Alistair Brown
30 REM For 32-bit machines
40 REM (c) BAU April 1993
50 :
60 MODR1:=VDU23,8202,0,0,0,0:FORx=-170
18STEP.128:FORy=-170STEP.128:a=x:bx=y:
001:REPEATc=a^3-3*a*b^2-1:d=a^3*b*a^2-b^3:
e=(a^2+b^2)^2:f=a^2*b/b/a:e=(2*a*(a^2-b^2)
)/e/3:b=(2*b*(a^2-b^2))/3:UNTIL(c^2+d^2)<1E-5:OC
OLO,-(a*(a+0)&ANDb>0)*2*(a&ANDb<0)*3)
:PLOT69,x*512+512,y*512+512:NEXT:NEXT

```

## Listing Info8

```

10 REM >Dots (Info8)
20 REM By Tim Jones
30 REM For 32-bit machines
40 REM (c) BAU April 1993
50 :
60 dim&9900
70 steps=10
80 shapes=9
90 ON ERROR SYS "Hourglass_Smash":REP
ORT:PRINT;" at "ERL:END
100 DIM code dim
110 more=0
120 FOR pass=0 TO 2 STEP 2
130 P%:=code
140 OPT pass
150 .dotty
160 STMFDP r13!,r14 }
170 SWI "OS_RemoveCursors"
180 MOV r0,#1<<9
190 MOV r9,#1<<23
200 MOV r12,#0
210 MOV r11,#0
220 MOV r8,#0
230 .dottyp
240 SWI "XOS_ReadEscapeSta
te"
250 BCC no_esc
260 MOV r0,#126
270 SWI "XOS_Byte"
280 LDMFDP r13!,pc }
290 .no_esc
300 MOV r0,#122
310 SWI "OS_Byte"
320 TBQ r1,#62
330 MOVQB r10,#1<<9
340 MOVQB r9,#1<<23
350 TBQ r1,#25
360 ADDBQ r9,r9,#1<<17
370 ADDBQ r10,r10,#7
380 TBQ r1,#121
390 SUBBQ r9,r9,#1<<17
400 SUBBQ r10,r10,#7
410 TBQ r1,#57
420 ADDBQ r10,r10,r9,LSR #18
430 TBQ r1,#41
440 SUBBQ r10,r10,r9,LSR #18
450 SWI "OS_Mouse"
460 TBQ r2,#0
470 MOVQB r8,#0
480 TBQ r8,#0
490 MOVQB r2,#0
500 TBQ r2,#1
510 MOVQB r8,#1

```

```

520 BLEQ changeshape
530 TBQ r2,#2
540 LDMBQFDP r13!,pc }
550 TBQ r2,#4
560 MOVQB r8,#1
570 BLEQ changeshape
580 ADD r12,r12,r0,asr #5
590 ADD r11,r11,r1,asr #5
600 TBQ r12,#0
610 ADDMI r12,r12,#360
620 CMP r12,#360
630 SUBGT r12,r12,#360
640 TBQ r11,#0
650 ADDMI r11,r11,#360
660 CMP r11,#360
670 SUBGT r11,r11,#360
680 BL drawshape
690 BL swapscr
700 B dottyp
710
720 .changedots
730 STMFDP r13!,r0,r14 }
740 LDR r0,dotshape
750 ADD r0,r0,#1
760 TBQ r0,#4
770 MOVQB r0,#0
780 STR r0,dotshape
790 LDMFDP r13!,r0,pc }
800
810 .changeshape
820 STMFDP r13!,r0,r14 }
830 LDR r0,shape
840 ADD r0,r0,#1
850 TBQ r0,#shapes
860 MOVQB r0,#0
870 STR r0,shape
880 LDMFDP r13!,r0,pc }
890
900 .drawshape
910 STMFDP r13!,r0,r7,r14 }
920 LDR r7,shape
930 ADR r5,shapeadrs
940 LDR r5,[r5,r7,LSL #2]
950 ADR r6,shapedots
960 LDR r6,[r6,r7,LSL #2]
970 LDR r7,sqshape
980 .shapelp
990 LDMIA r5!,r0,r1,r3 }
1000 MOV r2,r11
1010 BL rotate
1020 MOV r4,r1
1030 MOV r1,r3
1040 MOV r2,r12
1050 BL rotate
1060 MOV r2,r1
1070 MOV r1,r4
1080 BL plot
1090 SUB r2,r2,r2
1100 BL ball
1110 SUBS r6,r6,#1
1120 BNE shapelp
1130 LDMFDP r13!,r0,r7,pc }
1140
1150 .rotate
1160 STMFDP r13!,r2,r6,r14 }
1170 LDR r3,angtableadr
1180 ADD r6,r3,r2,LSL #3
1190 LDR r2,[r6,#0]
1200 LDR r3,[r6,#4]
1210 MUL r4,r0,r2
1220 MUL r4,r4,r6
1230 SUB r4,r4,r6
1240 MUL r5,r1,r2
1250 MLA r5,r0,r3,r5
1260 MOV r0,r4,asr #15
1270 MOV r1,r5,asr #15
1280 LDMFDP r13!,r2,r6,pc }
1290
1300 .plot
1310 STMFDP r13!,r2,r4,r14 }
1320 MOV r3,r1
1330 ADD r1,r2,r10
1340 MOV r2,r0
1350 MOV r0,r9
1360 BL divide
1370 MUL r1,r0,r2
1380 MUL r4,r0,r3
1390 MOV r0,r1,asr #15
1400 MOV r1,r4,asr #15
1410 LDMFDP r13!,r2,r4,pc }
1420
1430 .ball
1440 STMFDP r13!,r0,r3,r14 }
1450 MVM r3,#158
1460 CMP r0,r3
1470 LDMLEFDP r13!,r0,r3,pc }
1480 MVM r3,#126
1490 CMP r1,r3
1500 LDMLEFDP r13!,r0,r3,pc }
1510 CMP r0,#158
1520 LDMGEFDP r13!,r0,r3,pc }
1530 CMP r1,#126
1540 LDMGEFDP r13!,r0,r3,pc }
1550 LDR r3,screen+4
1560 ADD r3,r3,r1,LSL #6
1570 ADD r3,r3,r1,LSL #8
1580 ADD r3,r3,r0
1590 LDR r0,coltableadr
1600 LDRB r1,[r0,r2]
1610 LDR r0,dotshape
1620 ADD pc,pc,r0,LSL #5
1630 BQUD 0
1640 STRB r1,[r3,#0]
1650 STRB r1,[r3,#1]
1660 STRB r1,[r3,#320]
1670 STRB r1,[r3,#321]
1680 LDMFDP r13!,r0,r3,pc }
1690 BQUD 0
1700 BQUD 0
1710 BQUD 0
1720 STRB r1,[r3,#0]
1730 STRB r1,[r3,#-1]
1740 STRB r1,[r3,#1]
1750 STRB r1,[r3,#-320]

```

```

1760 STRB r1,[r3,#320]
1770 LDMFDP r13!,r0,r3,pc }
1780 BQUD 0
1790 BQUD 0
1800 STRB r1,[r3,#-1]
1810 STRB r1,[r3,#1]
1820 STRB r1,[r3,#-320]
1830 STRB r1,[r3,#320]
1840 LDMFDP r13!,r0,r3,pc }
1850 BQUD 0
1860 BQUD 0
1870 BQUD 0
1880 STRB r1,[r3,#0]
1890 STRB r1,[r3,#-2]
1900 STRB r1,[r3,#2]
1910 STRB r1,[r3,#-640]
1920 STRB r1,[r3,#640]
1930 LDMFDP r13!,r0,r3,pc }
1940 BQUD 0
1950 BQUD 0
1960
1970 .divide
1980 STMFDP r13!,r2,r6,r14 }
1990 BORS r4,r0,r1
2000 MOV r5,r0
2010 RSBMI r0,r0,#0
2020 TBQ r1,#0
2030 RSBMI r1,r1,#0
2040 .div32
2050 TBQ r1,#0
2060 BRQ divend
2070 MOV r3,#0
2080 MOV r2,#0
2090 MOV r6,#32
2100 .divlp1
2110 SUBS r6,r6,#1
2120 BRQ divend
2130 MOV r0,r0,asr #1
2140 BPL divlp1
2150 .divlp2
2160 MOV r0,r0,asr #1
2170 ADC r3,r3,r3
2180 CMP r3,r1
2190 SUBCS r3,r3,r1
2200 ADC r2,r2,r2
2210 SUBS r6,r6,#1
2220 BNE divlp2
2230 .divend
2240 MOV r0,r2
2250 TBQ r4,#0
2260 RSBMI r0,r0,#0
2270 MOV r1,r3
2280 TBQ r5,#0
2290 RSBMI r1,r1,#0
2300 LDMFDP r13!,r2,r6,pc }
2310
2320 .swapscr
2330 STMFDP r13!,r0,r5,r14 }
2340 LDR r0,screen
2350 LDR r1,screen+4
2360 STR r1,screen
2370 STR r0,screen+4
2380 MOV r0,#112
2390 LDR r1,scrbank
2400 SWI "OS_Byte"
2410 LDR r1,scrbank
2420 BOR r1,r1,#3
2430 STR r1,scrbank
2440 MOV r0,#113
2450 SWI "OS_Byte"
2460 MOV r0,#19
2470 SWI "OS_Byte"
2480 SWI &100+12
2490 LDMFDP r13!,r0,r5,pc }
2500
2510 .shape
2520 BQUD 0
2530 .dotshape
2540 BQUD 1
2550 .screen
2560 BQUD 148
2570 BQUD 149
2580 BQUD -1
2590 .scrbank
2600 BQUD 1
2610 .sqshape
2620 BQUD SQR(100^2*3)+1
2630 .coltableadr
2640 BQUD coltable
2650 .angtableadr
2660 BQUD angtable
2670
2680 ]
2690 shapeadrs=P%
2700 P%+=shapes*4
2710 shapedots=P%
2720 P%+=shapes*4
2730 angtable=P%
2740 FOR a=0 TO 360
2750 P%10=(1<<15)*COSRada
2760 P%14=(1<<15)*SINRada
2770 P%=P%PC(8)
2780 NEXT
2790 coltable=P%
2800 FOR a=0 TO sqshape/0*2
2810 P%70=FNcol(a/2/sqshape/0*14+1)
2820 P%=P%PC(1)
2830 NEXT
2840 [OPT pass
2850 ALIGN
2860 .shapedata
2870 ]
2880 NEXT
2890 SYS "Hourglass_On"
2900 FOR shape=0 TO shapes-1
2910 shapeadr!(shape*4)=P%
2920 shapedots!(shape*4)=FNshape(shape)
2930 NEXT
2940 SYS "Hourglass Off"
2950 IF more=0 PRINT"Change dim to =a"
:STR$"more;" near start of program:END
2960 MODE 13-128
2970 OFF

```

```

2980 SYS "OS_Byte",4,2
2990 SYS "OS_Byte",112,1
3000 SYS "OS_Byte",112,1
3010 SYS "OS_ReadVduVariables",screen,s
creen
3020 screen10+=&A0A0
3030 screen14+=&A0A0
3040 MOUSE RECTANGLE -32*40,-32*40,32*8
0,32*80
3050 MOUSE TO 32*5,32*1
3060 CALL dotty
3070 MODE 0
3080 END
3090 :
3100 DEF FNcol(shade)
3110 CASE shade DIV 4 OF
3120 WHEN 1:=&2C+shade MOD 4
3130 WHEN 2:=&D0+shade MOD 4
3140 WHEN 3:=&FC+shade MOD 4
3150 ENDCASE
3160 =shade MOD 4
3170
3180 DEF FNshape(shape)
3190 dots=0
3200 CASE shape OF
3210 WHEN 0:
3220 DIM blk 100
3230 text$=""- Tim Jones -""
3240 a=(sqshape/0*2)/(LENtext$*4)
3250 FOR b=1 TO LENtext$
3260 blk70=ASCMD$(text$,b)
3270 SYS "OS_Word",10,blk
3280 FOR c=1 TO 8
3290 e=((blk70 AND %110000)>>2)+((b
1k70 AND %100)>>1)+(blk70 AND %1)
3300 FOR d=0 TO 7
3310 IF e>d AND 1:PROCdot((1<<4+c)
*a,-sqshape/0*(b*4-d)*a,0)
3320 NEXT
3330 NEXT
3340 NEXT
3350 WHEN 1:
3360 FOR a=-100 TO 75 STEP 25
3370 FOR b=-75 TO 75 STEP 25
3380 PROCdot(a,b,-100)
3390 PROCdot(a+25,b,100)
3400 PROCdot(-100,b,a+25)
3410 PROCdot(100,b,a)
3420 NEXT
3430 NEXT
3440 FOR a=-100 TO 100 STEP 25
3450 FOR b=-100 TO 100 STEP 25
3460 PROCdot(a,-100,b)
3470 PROCdot(a,100,b)
3480 NEXT
3490 NEXT
3500 WHEN 2:
3510 FOR a=0 TO 350 STEP 10
3520 cos=80*COSRada
3530 sin=80*SINRada
3540 PROCdot(100,cos,sin)
3550 PROCdot(-100,cos,sin)
3560 PROCdot(cos,100,sin)
3570 PROCdot(cos,-100,sin)
3580 PROCdot(cos,sin,100)
3590 PROCdot(cos,sin,-100)
3600 NEXT
3610 WHEN 3:
3620 FOR r=20 TO 60 STEP 10
3630 b=r/40
3640 FOR a=0 TO 330 STEP 30
3650 cos=r*COSRada
3660 sin=r*SINRada
3670 PROCdot(b,cos,sin)
3680 PROCdot(-b,cos,sin)
3690 PROCdot(cos,b,sin)
3700 PROCdot(cos,-b,sin)
3710 PROCdot(cos,sin,b)
3720 PROCdot(cos,sin,-b)
3730 NEXT
3740 NEXT
3750 WHEN 4:
3760 FOR a=-100 TO 100 STEP 20
3770 FOR b=0 TO 340 STEP 20
3780 PROCdot(80*COSRadb,a,80*SINRAD
b)
3790 NEXT
3800 NEXT
3810 WHEN 5:
3820 FOR a=-100 TO -20 STEP 20
3830 FOR b=0 TO 330 STEP 30
3840 cos=30*COSRadb
3850 sin=30*SINRadb
3860 PROCdot(a,cos,sin)
3870 PROCdot(cos,a,sin)
3880 PROCdot(cos,sin,a)
3890 PROCdot(-a,cos,sin)
3900 PROCdot(cos,-a,sin)
3910 PROCdot(cos,sin,-a)
3920 NEXT
3930 NEXT
3940 WHEN 6:
3950 FOR a=-1 TO .9 STEP .1
3960 r=100-70*SINRAD(a*90+90)
3970 FOR b=0 TO 340 STEP 20
3980 PROCdot(r*COSRadb,a*100,r*SINR
adb)
3990 NEXT
4000 NEXT
4010 WHEN 7:
4020 FOR a=0 TO 340 STEP 20
4030 FOR b=0 TO 330 STEP 30
4040 r=70-30*COSRadb
4050 PROCdot(r*COSRadb,30*SINRADb,r
*SINRada)
4060 NEXT
4070 NEXT
4080 WHEN 8:
4090 FOR a=0 TO 350 STEP 10
4100 FOR b=0 TO 300 STEP 60
4110 r=70+25*COSRadb
4120 PROCdot(r*COSRadb-35,25*SINRAD
b,r*SINRada)
4130 PROCdot(r*COSRadb+35,r*SINRada

```

```

,25*SINRADb)
4140 NEXT
4150 NEXT
4160 ENDCASE
4170 sdots
4180 :
4190 DEF PROCdot(x,y,z)
4200 P%:=x
4210 P%:=y
4220 P%:=z
4230 P%:=P%*(12)
4240 dots+=1
4250 ENDPROC
4260 :
4270 DEF P%:=P%*(b)
4280 IF more=0 AND P%-code>b>dim more=P
%-code=b
4290 IF more>0 more+=b:=P%
4300 P%:=b

```

### Listing Info9

```

10 REM >IntSort (Info9)
20 REM By Albert Hoekstra
30 REM For 32-bit machines
40 REM (c) BAU April 1993
50 :
60 CLS
70 VDU 15
80 PRINT"IntSort"
90 INPUT"How many integers",t%
100 cmax%=300
110 DIM r%(t%),f%(cmax%)
120 f%:=20008
130 FOR n%=1 TO t%
140 r%(n%)=RND(100)
150 NEXT
160 PRINT
170 PRINT"Input numbers:"
180 FOR n%=1 TO t%
190 PRINT r%(n%);
200 NEXT n%
210 PRINT
220 :
230 time=TIME
240 FOR n%=1 TO t%
250 f%*(r%(n%))+1
260 NEXT n%
270 t%:=0
280 n%=1
290 c%=0
300 REPEAT
310 WHILE f%(c%)>0
320 r%(n%)=c%
330 f%(c%)=-1
340 n%+=1
350 ENDOPTION
360 c%+=1
370 UNTIL n%=t%
380 :
390 PRINT"Time taken: ",TIME-time" cs
ec, press a key..."
400 p=GET
410 PRINT"Sorted numbers:"
420 FOR n%=1 TO t%
430 PRINT r%(n%);
440 NEXT n%
450 PRINT
460 END

```

### Listing Info10

```

10 REM >FracSort (Info10)
20 REM By Albert Hoekstra
30 REM For 32-bit machines
40 REM (c) BAU April 1993
50 :
60 CLS
70 f%:=20208
80 PRINT"FracSort"
90 INPUT"How many numbers",t%
100 DIM r%(t%),s%(t%)
110 :
120 FOR n%=1 TO t%
130 r%(n%)=RND(100)+.01*RND(100)
140 NEXT
150 t%:=t%-.50
160 PRINT"Input numbers:"
170 FOR n%=1 TO t%
180 PRINT r%(n%);
190 NEXT
200 PRINT
210 :
220 PROCfracsrt(t%)
230 :
240 PRINT"Time taken: ",TIME-time" cs
ec, press a key..."
250 p=GET
260 PRINT"Sorted:"
270 FOR n%=1 TO t%
280 PRINT s%(n%);
290 NEXT n%
300 PRINT
310 END
320 :
330 DEF PROCfracsrt(t%)
340 time=TIME
350 maxr=(1)
360 minr=(1)
370 FOR n%=1 TO t%
380 IF r%(n%)<minr THEN minr=r%(n%)
390 IF r%(n%)>maxr THEN maxr=r%(n%)
400 NEXT
410 cmax%=max-min
420 t%:=t%-.min
430 DIM f%(cmax%+1)
440 FOR n%=1 TO t%
450 f%(n%)+=1
460 NEXT n%
470 :
480 s%=1
490 FOR c%=0 TO cmax%+1
500 f%*(c%)

```

```

510 f%(c%)=s%
520 s%+=f%
530 NEXT c%
540 :
550 s%:=1
560 FOR n%=1 TO t%
570 c%=r%(n%)
580 i%=f%(c%)
590 j%=i%
600 home=0
610 REPEAT
620 IF s%(j%)=-1 THEN
630 s%(j%)=r%(n%)
640 home=1
650 ELSE
660 IF r%(n%)<=s%(j%) THEN
670 nr%=f%(c%+1)-1
680 REPEAT
690 s(nr%)=s(nr%)-1
700 nr%-=1
710 UNTIL nr%<=j%
720 s%(j%)=r%(n%)
730 home=1
740 ENDIF
750 ENDIF
760 j%+=1
770 UNTIL home=1
780 NEXT n%
790 s%:=s%()+min
800 ENDPROC

```

### Listing Info11

```

10 REM >RunImage (Info11)
20 REM Main Auto program
30 REM By Andrew Young
40 REM Modified for general signp
oste by Colin Turner
50 REM For 32-bit machines
60 REM (c) BAU October 1992/April 199
3
70 :
80 key$=INKEY$(0)
90 open%=1:close%=2:app%=3:mod%=4:vd
u%:=5:mode%=6:pin%=7
100 SYS "Wimp_Initialise",200,44B53415
4,"Transient"
110 SYS "XOS_ReadVarVal","Initialise$E
xec",0,-1,0,3 TO ,,r2%
120 IF r2%=0 THEN PROCfile("Default")
130 SYS "OS_GetEnv" TO EnvStr$
140 IF INSTR(EnvStr$,"-quit") THEN
150 i%=INSTR(EnvStr$,"")
160 i%=INSTR(EnvStr$,"")
170 REPEAT
180 i%+=1
190 UNTIL MID$(EnvStr$,i%,1)<" "
200 command$=MID$(EnvStr$,i%,1)
210 ENDIF
220 IF command$=" " AND key$<" " TH
EN PROCfile(key$)
230 IF command$<" " THEN PROCsigpos
t(command$)
240 SYS "Wimp_CloseDown"
250 "Get Initialises$Exec True
260 END
270 :
280 DEF FNget_line(fb%)
290 s%=""
300 REPEAT
310 v%:=GET#fb%
320 s%+=CHR$(v%)
330 UNTIL ((EOF#fb%) OR (v%<32))
340 s%
350 :
360 DEF FNfunc(fc%)
370 fc%=MID$(fc$,2,LEN(fc$)-3)
380 CASE fc$ OF
390 WHEN "Open":nf%=open%
400 WHEN "Close":nf%=close%
410 WHEN "Application":nf%=app%
420 WHEN "Module":nf%=mod%
430 WHEN "VDU":nf%=vdu%
440 WHEN "Mode":nf%=mode%
450 WHEN "Pin":nf%=pin%
460 OTHERWISE:
470 ERROR 1,"Warning: Bad file headin
g"
480 ENDCASE
490 =nf%
500 :
510 DEF PROCvdu(vs%)
520 REPEAT
530 d%:=INSTR(vs$,"")
540 IF d%=0 THEN d%:=LEN(vs%)
550 v%:=VAL(LEFT$(vs$,d%))
560 VDU v%
570 vs$=RIGHT$(vs$,LEN(vs$)-d%)
580 UNTIL vs$=""
590 ENDPROC
600 :
610 DEF PROCfile(fn%)
620 i%=OPENIN("Initialise$Dir."+fn%)
630 PROCread_file
640 CLOSE i%
650 ENDPROC
660 :
670 DEF PROCread_file
680 IF i%<0 THEN
690 func%=app%
700 WHILE NOT EOF #i%
710 at$:=FNget_line(i%)
720 IF at$<" " THEN
730 IF LEFT$(at$,1)="" THEN
740 func%=FNfunc(at$)
750 ELSE
760 CASE func% OF
770 WHEN open%:OSCLI("Filer_OpenD
ir "+at$)
780 WHEN close%:OSCLI("Filer_Clo
seDir "+at$)
790 WHEN app%:OSCLI("WimpTask "+s
t$)
800 WHEN mod%:OSCLI("RMLoad "+st$

```

```

)
810 WHEN vdu%:PROCvdu(at$)
820 WHEN mode%:SYS "Wimp_SetMode"
,VAL(at$)
830 WHEN pin%:OSCLI("Pin "+st$)
840 ENDCASE
850 ENDIF
860 ENDIF
870 ENDWHILE
880 ENDIF
890 ENDPROC
900 :
910 DEF PROCsignpost(fn%)
920 i%=OPENIN(fn%)
930 PROCread_file
940 CLOSE i%
950 ENDPROC

```

### Listing Info12

```

10 REM >AutoDat (Info12)
20 REM Create files for Auto
30 REM By Andrew Young
40 REM & Colin Turner
50 REM For 32-bit machines
60 REM (c) BAU April 1993
70 :
80 free%=(HIMEM-END-48000) AND &FFFF
000
90 DIM q% #100,w% free%
100 REPEAT
110 READ file$
120 IF file$<" " THEN
130 PRINT file$
140 READ type$,olen%
150 IF type%&FFF OR type%&FFE OR t
ype%&FEB THEN
160 out%:=OPENOUT(file$)
170 REPEAT
180 READ line$
190 IF line$<" " BPOT=out%,line$
200 UNTIL line$=""
210 CLOSE#out%
220 SYS "OS_File",18,file$,type%,
230 ELSE
240 line%:=0
250 d$=""
260 i%=0
270 WHILE i%<olen%
280 b$:=FNC
290 IF b$="a" AND b$="z" THEN
300 off%:=EVAL("a"+b$+FNC)
310 FOR k%=0 TO (ASC(b$)-ASC"a")+2
320 w%?i%:=w%?(i%+off%)
330 i%+=1
340 NEXT
350 ELSE
360 w%?i%:=EVAL("a"+b$+FNC)
370 i%+=1
380 ENDIF
390 ENDWHILE
400 SYS "OS_File",18,file$,type%,w
%,w%olen%
410 ENDIF
420 ENDIF
430 UNTIL file$=""
440 END
450 :
460 DEF FNC
470 LOCAL c$
480 IF d$="" THEN
490 READ d$,ch$
500 line%+=1
510 d$+=ch$
520 SYS "OS_CRC",0,q%,q%+LEN(d$),1 TO
crc%
530 IF crc%<EVAL("a"+ch$) PRINT"Erro
r in data line ",line%:END
540 ENDIF
550 c$:=LEFT$(d$,1)
560 d$:=MID$(d$,2)
570 c$
580 :
590 DATA "IBoot",&FEB,&13E
600 DATA "IAuto IBoot file
610 DATA
620 DATA Set Initialise$Dir <Obey$Dir>
630 DATA IconSprites <Initialise$Dir>.
!Sprites
640 DATA Set Alias$RunType_030 Run <I
nitialise$Dir>.!Run %*0
650 DATA Set File$Type_030 SignPost
660 DATA
670 DATA "Run <Initialise$Dir>.!RunIm
age %*0
680 DATA
690 DATA "Use the above line if you w
ish the
700 DATA "application to be executed
when
710 DATA "you enter its directory aut
omatically
720 DATA *
730 DATA "IRun",&FEB,&695
740 DATA "IAuto IRun file
750 DATA
760 DATA Set Initialise$Dir <Obey$Dir>
770 DATA IconSprites <Initialise$Dir>.
!Sprites
780 DATA WimpSlot -min 32k -max 32k
790 DATA Run <Initialise$Dir>.!RunImag
e %*0
800 DATA *
810 DATA "ISprites",&FF9,&6B8
820 DATA 0300000010a48C06000004,6364
830 DATA 030000021617546F0A14170,F1D5
840 DATA 004a1c0b0F0A282C2C0001,350F
850 DATA 00000C02027308444b350,315D
860 DATA 0007077b31e14e47772800,D0F5
870 DATA BBBBBBBB070a57a0414k2,7AD4
880 DATA 8a4F13F4507077777765c7,60C8
890 DATA 8a13b76f75p13c7fA9c23f,AC63
900 DATA 4A40f14a8EaC220bA4f14CA,EA4D

```

```

910 DATA 777c13q14h28g2C250bAE1A,558E
920 DATA 9a5012K0C6FFF0F0F0F0F0,AACT
930 DATA 8c14f1c28a2AF0FFFFF0F0,6912
940 DATA 8a04q14k28a4F13P050F0A,CP44
950 DATA 1g5c78a13h76m1nA4K3cF,1504
960 DATA 4A8H0F0C2EA3g1C1B7h14c,F2F6
970 DATA 8Ag28j48h14aEw90gB3D40,F2E2
980 DATA 2000066696C65F303330B,F,D500
990 DATA F04aF210eF607aF2CaFF80,D2CE
1000 DATA 0100000CaFF7777777a04d,E59E
1010 DATA 07b0DaF9F7cCaCFCd47F01,E56C
1020 DATA 477p147Fj2Df1470g55F7b2,D4B8
1030 DATA 8gD6q1470q3C0e35v64r78z,FA2B
1040 DATA 8z3CrC8A7AAAA7Ab05AAAAA,F455
1050 DATA 04a077Ad14h11e14gBBF74a,510F
1060 DATA F0hABeB8q14q14t28o4Dz22,2896
1070 DATA z3Ez5Az76z92zAeZcAzE6g,F,280A
1080 DATA F4P04180401000073D616C,83F3
1090 DATA 6C5F3033300000002a0408,5EA1
1100 DATA a08a08000Ba102Ca1498a18,48A3
1110 DATA 0Ca1C77777777777a0477770,AA9E
1120 DATA 000F77FeF0C087b1AF7e0C,77AF
1130 DATA b3D70q18a20g30h0CA707A7,6903
1140 DATA AAAAAA5454545454545454,60F0F,7F31
1150 DATA 10C10C18230v5400,480F
1160 DATA "Default",&FFF,&0
1170 DATA *
1180 DATA *

```

### Listing Info13

```

10 REM >Monkey1 (Info13)
20 REM By Richard Talbot-Watkins
30 REM For 8-bit machines
40 REM (c) BAU April 1993
50 :
60 MODE 7
70 PRINT "Assembling..."
80 mem% = PAGE+4A00
90 code% = 4900
100 :
110 top = 470
120 addr = 474
130 temp = 478
140 wordno = 47C
150 thisword = 480
160 data = 484
170 :
180 FOR N%=0 TO 2 STEP 2
190 P%:=code%
200 [OPT N%
210 JMP insertdata
220 JMP findword
230 JMP checkword
240 :
250 .insertdata
260 JSR findword
270 LDY #0
280 .incnum
290 LDA (addr),Y
300 INC
310 CMP #13
320 BNE incnum
330 CLC
340 LDA (addr),Y
350 ADC #2
360 STA (addr),Y
370 INCY
380 LDA (addr),Y
390 ADC #0
400 STA (addr),Y
410 TYA
420 CLC
430 ADC addr
440 STA addr
450 LDA addr+1
460 ADC #0
470 STA addr+1
480 LDA top
490 STA temp
500 LDA top+1
510 STA temp+1
520 .copy
530 LDY #0
540 LDA (temp),Y
550 LDY #2
560 STA (temp),Y
570 SEC
580 LDA temp
590 SBC #1
600 STA temp
610 LDA temp+1
620 SBC #0
630 STA temp+1
640 CMP addr+1
650 BNE copy
660 LDA temp
670 CMP addr
680 BNE copy
690 LDA data
700 LDY #1
710 STA (temp),Y
720 LDA data+1
730 INCY
740 STA (temp),Y
750 CLC
760 LDA top
770 ADC #2
780 STA top
790 LDA top+1
800 ADC #0
810 STA top+1
820 RTS
830 :
840 .findword
850 LDA #0
860 STA addr
870 STA wordno
880 STA wordno+1
890 LDA (mem% DIV 256)
900 STA addr+1
910 .find2
920 LDA wordno
930 CMP thisword

```

```

940 BNE find3
950 LDA wordno+1
960 CMP thisword+1
970 BNE find3
980 RTS
990 :
1000 JSR nextword
1010 BCC find2
1020 BRK:BRK
1030 EQUS "Word not found"
1040 BRK
1050 :
1060 .checkword
1070 LDA #0
1080 STA addr
1090 STA wordno
1100 STA wordno+1
1110 LDA #((mem% DIV 256))
1120 STA addr+1
1130 .search1
1140 LDY #0
1150 .search2
1160 LDA (addr),Y
1170 CMP #700,Y
1180 BNE notit
1190 INY
1200 CMP #13
1210 BNE search2
1220 RTS
1230 .notit
1240 JSR nextword
1250 BCC search1
1260 LDY #0
1270 .newword
1280 LDA #700,Y
1290 STA (addr),Y
1300 INY
1310 CMP #13
1320 BNE newword
1330 LDA #0
1340 STA (addr),Y
1350 INY
1360 STA (addr),Y
1370 INY
1380 TTA
1390 CLC
1400 ADC top
1410 STA top
1420 LDA top+1
1430 ADC #0
1440 STA top+1
1450 RTS
1460 :
1470 .nextword
1480 LDY #0
1490 .next2
1500 LDA (addr),Y
1510 INY
1520 CMP #13
1530 BNE next2
1540 STY temp
1550 LDA (addr),Y
1560 CLC
1570 ADC temp
1580 STA temp
1590 INY
1600 LDA (addr),Y
1610 ADC #0
1620 STA temp+1
1630 CLC
1640 LDA temp
1650 ADC #2
1660 STA temp
1670 BCC nohigh
1680 INC temp+1
1690 .nohigh
1700 CLC
1710 LDA temp
1720 ADC addr
1730 STA addr
1740 LDA temp+1
1750 ADC addr+1
1760 STA addr+1
1770 INC wordno
1780 BNE next3
1790 INC wordno+1
1800 .next3
1810 LDA addr
1820 CMP top
1830 BNE morewords
1840 LDA addr+1
1850 CMP top+1
1860 BNE morewords
1870 SEC:RTS
1880 .morewords
1890 CLC:RTS
1900 :
1910 NEXT
1920 :
1930 PRINT "Code assembled."
1940 PRINT "CHAINING part 2...."
1950 CHAIN "Monkey2"

```

#### Listing Info14

```

10 REM >Monkey2 (Info14)
20 REM By Richard Talbot-Watkins
30 REM & Matthew Godbolt
40 REM For 8-bit machines
50 REM (c) BAU April 1993
60 :
70 MODE 7
80 HIMEM=PAGE+&A00
90 PROCinit
100 PROCbuild
110 PROCoutput
120 END
130 :
140 DEF PROCinit
150 insertdata=&900
160 findword=&903
170 checkword=&906
180 :
190 mem%=PAGE+&A00

```

```

200 top=&70
210 addr=&74
220 temp=&78
230 wordno=&7C
240 thisword=&80
250 data=&84
260 :
270 FOR N%=&70 TO &87 STEP 4
280 IN%=&0
290 NEXT
300 ENDPROC
310 :
320 DEF PROCbuild
330 INPUT "Enter text filename: "file$
340 file%=OPENIN (file$)
350 IF file%=0 PRINT CHR$(129);CHR$(7);"Fi
le not found":END
360 PRINT"OK..Building word tables.."
370 :
380 AS%="Longest possible string"
390 PS%="":? "+CHR$(13)
400 A%=&32
410 ?mem%+13:mem%+1=&0
420 !top:mem%+3
430 oldword%=&0
440 REPEAT
450 IF A%=&32 REPEAT:A%=&BGET #file%:UNT
IL A%<&32
460 AS%<CHR$(A%)
470 REPEAT
480 A%=&BGET #file%
490 end%<INSTR(PS,CHR$(A%))
500 IF end%=&0 AS%<AS%+CHR$(A%)
510 UNTIL end%
520 IF LEN(AS%)+POS>39 PRINT
530 PRINT AS%:" "
540 $&700=&AS%
550 CALL checkword
560 word%<wordno
570 IF oldword% !thisword=&oldword%:lda
ta=word%:CALL insertdata
580 oldword%<word%
590 UNTIL end%=&5 OR !top:&7B80
600 CLOSE #file%
610 ENDPROC
620 :
630 DEF PROCoutput
640 CLS
650 FOR N%=&0 TO 1
660 VDU 132,157,141,131
670 PRINT "Infinite Monkeys - random o
utput"
680 NEXT
690 PRINT SPC(8);CHR$(130);"Press <SHI
FT> to scroll"
700 VDU 28,0,24,39,4,14
710 :
720 REPEAT
730 word%<1
740 REPEAT
750 !thisword=word%
760 CALL findword
770 ptr%<addr
780 AS%<(ptr%)
790 IF LEN(AS%)+POS>39 PRINT
800 IF LEN(AS%)+1 AND INSTR(PS,AS) PRIN
T CHR$(8);AS ELSE PRINT AS%:" "
810 num%<ptr%!(LEN(AS%)+1) AND &FFFF
820 IF num% word%<ptr%!(LEN(AS%)+3)&(RND
(num%)-1 AND -2)) AND &FFFF
830 UNTIL num%=&0
840 UNTIL FALSE

```

#### Listing Info15

```

10 REM >Why?
20 REM By Patrick Jacol  
30 REM For 32-bit machines
40 REM (c) BAU April 1993
50 :
60 DIM block% &200,ind% 16, val% 2
70 SYS "Wimp_Initialise",200,&4B53415
4,"Why?"
80 P%<block%:[OPT 2
90 EQUD &00000010E:EQUD &00000013C
100 EQUD &0000003EE:EQUD &0000002BC
110 EQUD &000000000:EQUD &000000000
120 EQUD &FFFFFFFEC:EQUD &04050003
130 EQUD &01070207:EQUD &0000200D4
140 EQUD &000000000:EQUD &FFFFFFF50
150 EQUD &0000002E0:EQUD &000000000
160 EQUD &00000003D:EQUD &000003000
170 EQUD &000000001:EQUD &01B0002E0
180 EQUD &6F727245:EQUD &FFFFFFD72
190 EQUD &00000003C:EQUD &000000004
200 EQUD &000000072:EQUD &FFFFFFFEB0
210 EQUD &00000026C:EQUD &FFFFFFFEC
220 EQUD &1700613D:EQUD &00000344C
230 EQUD &000009472:EQUD &000000026
240 EQUD &000000120:EQUD &FFFFFFF64
250 EQUD &0000001BA:EQUD &FFFFFFF9C
260 EQUD &C701903D:EQUD &7400D4B4F
270 EQUD &65755669:EQUD &7F00D308D
280 EQUD &00000000E:EQUD &FFFFFFF30
290 EQUD &000000060:EQUD &FFFFFFF7C
300 EQUD &D7006081A:EQUD &6P727265
310 EQUD &6550D072:EQUD &7F00D3B64
320 EQUD &00000027E:EQUD &FFFFFFF30
330 EQUD &0000002D0:EQUD &FFFFFFF7C
340 EQUD &D7006081A:EQUD &6P727265
350 EQUD &6550D072:EQUD &7F00D3B64
360 EQUD &61656C50:EQUD &63206573
370 EQUD &6B63696C:EQUD &206B6F20
380 EQUD &74204B4F:EQUD &6B69206F
390 EQUD &6C6C17473:EQUD &6F6D206C
400 EQUD &656C7564:EQUD &6D4C00D2E
410 EQUD &D7006081A:EQUD &6P727265
420 EQUD &6550D072:EQUD &7F00D3B64
430 EQUD &00000027E:EQUD &FFFFFFF30
440 EQUD &0000002D0:EQUD &FFFFFFF7C
450 EQUD &D7006081A:EQUD &6P727265
460 EQUD &6550D072:]
470 SYS "Wimp_CreateWindow",,block% TO

```

```

handle%
480 P%<block%:[OPT 2
490 EQUD handle%:EQUD &000000672
500 EQUD &FFFFFFFEB0:EQUD &00000026C
510 EQUD &FFFFFFFEC:EQUD &1700613D
520 EQUD ind%:EQUD val%
530 EQUD &000000016:]
540 P%<ind%:[OPT 2
550 EQUD &20216148:EQUD &69727041
560 EQUD &6F46206C:EQUD &6D216C6F:]
570 $val%<"L"
580 SYS "Wimp_CreateIcon",,block%
590 !block%<handle%
600 SYS "Wimp_GetWindowState",,block%
610 SYS "Wimp_OpenWindow",,block%
620 :
630 quit%<FALSE
640 REPEAT
650 SYS "Wimp_Poll",0,block% TO reason
%
660 CASE reason% OF
670 WHEN 2:SYS "Wimp_OpenWindow",,bloc
K%
680 WHEN 6:IF block%+16 THEN quit%<T
RUE
690 WHEN 17,18:IF !block%<0 THEN quit%
=TRUE
700 ENDCASE
710 UNTIL quit%
720 SYS "Wimp_CloseDown":END

```

#### Listing Info16

```

10 REM >SprDem6 (Info16)
20 REM By DA
30 REM For 32-bit machines
40 REM (c) BAU April 1993
50 :
60 MODE 13
70 OFF
80 PROCinit_sprite_area
90 PROCdemo
100 END
110 :
120 DEF PROCinit_sprite_area
130 sprite_op%<&2E
140 size%<128
150 scale=&256/size%
160 area_size%<size%*size%+&100
170 DIM sprites% area_size%,zoom% 16
180 !sprites%<area_size%
190 sprites%+8=&16
200 SYS sprite_op%,&10F,sprites%,"demo
",size%,size%,13
220 !zoom%<100*scale
230 zoom%+4=&100*scale
240 zoom%+8=&100
250 zoom%+12=&100
260 SYS sprite_op%,&3E TO ,,,save_area
_size%
270 DIM save_area% save_area_size%
280 ENDPROC
290 :
300 DEF PROCdemo
310 REPEAT
320 FOR c%=&0 TO 1023
330 PROCinsert (RND(size%)/4)+size%*3/
8,RND(size%)/4)+size%*3/8,c%/4)
340 SYS sprite_op%,&134,sprites%,"de
mo",128,0,,zoom%,-1
350 NEXT
360 UNTIL FALSE
370 ENDPROC
380 :
390 DEF PROCinsert (x%,y%,c%)
400 SYS sprite_op%,&120,sprites%,"demo
",0
410 SYS sprite_op%,&120,sprites%,"demo
",size%-2
420 SYS sprite_op%,&11F,sprites%,"demo
",y%
430 SYS sprite_op%,&11F,sprites%,"demo
",y%
440 SYS sprite_op%,&12E,sprites%,"demo
",0
450 SYS sprite_op%,&12E,sprites%,"demo
",size%-2
460 SYS sprite_op%,&12D,sprites%,"demo
",x%-1
470 SYS sprite_op%,&12D,sprites%,"demo
",x%
480 !save_area%<0
490 SYS sprite_op%,&13C,sprites%,"demo
",save_area% TO r0,r1,r2,r3
500 GCOL (c% AND 63) TINT (c% AND 192)
510 LINE 0,y%*4,size%*4-1,y%*4
520 LINE x%*4,0,x%*4,size%*4-1
530 SYS sprite_op%,&r0,r1,r2,r3
540 ENDPROC

```

#### Listing Info17

```

10 REM >SprDem7 (Info17)
20 REM By DA
30 REM For 32-bit machines
40 REM (c) BAU April 1993
50 :
60 MODE 13
70 OFF
80 VDU 19,0,24,&60,&80,&80
90 PROCinit_sprite_area
100 PROCmake_picture
110 PROCdemo
120 END
130 :
140 DEF PROCinit_sprite_area
150 sprite_op%<&2E
160 area_size%<161*1024
170 DIM sprites% area_size%,zoom% 16
180 !sprites%<area_size%
190 sprites%+8=&16
200 SYS sprite_op%,&109,sprites%

```

```

210 SYS sprite_op%,&10F,sprites%,"pic
ture",,320,256,13
220 SYS sprite_op%,&11D,sprites%,"pic
ture"
230 SYS sprite_op%,&3E TO ,,,save_area
_size%
240 DIM save_area% save_area_size%
250 ENDPROC
260 :
270 DEF PROCmake_picture
280 PRINT"Please wait...."
290 m$="BBC Acorn User"
300 !save_area%<0
310 SYS sprite_op%,&13C,sprites%,"pic
ture",save_area% TO r0,r1,r2,r3
320 GCOL 128,&101010
330 CLG
340 FOR i%<1 TO 30
350 x%<RND(1280)-512
360 y%<RND(1280)-128
370 xscale=1-RND(1)*4
380 yscale=1-RND(1)*4
390 PROCmessage (x%-8,y%-8,xscale,ysca
le,m$,&0)
400 PROCmessage (x%,y%,xscale,yscale,m
$,RND(256))-1)
410 NEXT
420 SYS sprite_op%,&r0,r1,r2,r3
430 ENDPROC
440 :
450 DEF PROCmessage (x%,y%,xscale,ysca
le,t$,c%)
460 LOCAL i%
470 !zoom%<100*xscale
480 zoom%+4=&100*yscale
490 zoom%+8=&100
500 zoom%+12=&100
510 GCOL (c% AND 63) TINT (c% AND 192)
520 FOR i%<0 TO LEN(t$)
530 SYS sprite_op%,&433,ASC MID$(t$,i%)
,,,x%,y%,zoom%
540 x%+&32*xscale
550 NEXT
560 ENDPROC
570 :
580 DEF PROCdemo
590 n%<8
600 DIM r%(n%),col%(n%),tint%(n%)
610 FOR i%=&0 TO n%-1
620 IF i%<7 col%(i%)<1<i% ELSE tint%
(i%)<1<i%
630 r%(i%)<=&64*i%
640 NEXT
650 CLS
660 REPEAT
670 !save_area%<0
680 SYS sprite_op%,&13D,sprites%,"pic
ture",save_area% TO r0,r1,r2,r3
690 GCOL 128 TINT 0
700 CLG
710 FOR i%=&0 TO n%-1
720 IF r%(i%)<0 THEN
730 GCOL col%(i%) TINT tint%(i%)
740 CIRCLE FILL 640,512,r%(i%)
750 ENDIF
760 r%(i%)<+16
770 NEXT
780 SYS sprite_op%,&r0,r1,r2,r3
790 WAIT
800 SYS sprite_op%,&122,sprites%,"pic
ture",0,0,8
810 UNTIL r%(7)>&820
820 ENDPROC

```

#### Listing Info18

```

10 REM >SprDem8 (Info18)
20 REM By DA
30 REM For 32-bit machines
40 REM (c) BAU April 1993
50 :
60 MODE 13
70 OFF
80 PROCinit_sprite_area
90 PROCcreate_mess("BBC Acorn User Sp
rite Demo")
100 PROCselect_mode(3)
110 PROCanimate
120 END
130 :
140 DEF PROCinit_sprite_area
150 sprite_op%<&2E
160 area_size%<30*1024
170 DIM sprites% area_size%,zoom% 16,t
ab% &100,col%&3)
180 col%&()=&2,4,16,256
190 !sprites%<area_size%
200 sprites%+8=&16
210 SYS sprite_op%,&109,sprites%
220 zoom%+8=&100
230 zoom%+12=&100
240 ENDPROC
250 :
260 DEF PROCcreate_mess(m$)
270 n%<LEN(m$)
280 DIM sp%(n%)
290 FOR i%=&0 TO n%-1
300 c%<RND(255)
310 COLOUR (c% AND 63) TINT (c% AND 1
92)
320 PRINTTAB(0,0) MID$(m$,i%+1,1)
330 SYS sprite_op%,&110,sprites%,&STR$
i%,,,0,992,31,1023
340 SYS sprite_op%,&118,sprites%,&STR$
i% TO ,,,sp%(i%)
350 SYS sprite_op%,&121D,sprites%,&sp%(
i%)
360 FOR x%=&0 TO 7
370 FOR y%=&0 TO 7
380 SYS sprite_op%,&1229,sprites%,&sp
%(i%),x%,y% TO ,,,,c%,t%
390 IF c%<0 AND t%<0 SYS sprite_op%
,&122C,sprites%,&sp%(i%),x%,y%,0
400 NEXT

```

```

410 NEXT
420 NEXT
430 ENDPROC
440 :
450 DEF PROCanimate
460 bank=1
470 REPEAT
480 FOR a%=0 TO 359
490 WAIT
500 SYS "OS_Byte",112,bank%
510 bank%=3-bank%
520 SYS "OS_Byte",113,bank%
530 SYS "ColourTrans_SetGCOL",&80808
000,,,128
540 CLG
550 PRINTTAB(0,0);col%*(cur_col%+
560 FOR i%=0 TO n%-1
570 a=a%+3*i%
580 x%=640+400*COSRAD(a*3)
590 y%=512+400*SINRAD(a*7)
600 zoom%=(0+100+300*ABS(COSRAD(a
)
610 zoom%=(4+100+300*ABS(SINRAD(a
)
620 SYS "ColourTrans_SetGCOL",0,,,1
28
630 SYS sprite_op%,&232,sprite%,sp
%(i%),x%,y%,8,,zoom%
640 SYS sprite_op%,&234,sprite%,sp
%(i%),x%,y%,8,,zoom%,ctab%
650 NEXT
660 i%=INKEY(0)-48
670 IF i%=>0 AND i%<4 PROCselect_mod
e(i%)
680 NEXT
690 UNTIL FALSE
700 ENDPROC
710 :
720 DEF PROCselect_mode(col%)

```

```

730 cur_col%=col%
740 CASE col% OF
750 WHEN 0:MODE 4
760 WHEN 1:
770 MODE 1
780 FOR i%=0 TO 3
790 COLOUR i%,i%*50,i%*50,i%*50
800 NEXT
810 WHEN 2:
820 MODE 9
830 FOR i%=0 TO 7
840 COLOUR i%,8,i%*50,i%*50,i%*50
0
850 NEXT
860 WHEN 3:MODE 13
870 ENDCASE
880 OFF
890 IF MODE=13 THEN
900 ctab%=-1
910 ELSE
920 SYS "ColourTrans_SelectTable",13,
0,-1,-1,ctab%
930 ctab%=tab%
940 ENDIF
950 VDU 19,0,24,&80,&80,&80
960 ENDPROC

```

# Listing Info19

```

10 REM >SprDem9 (Info19)
20 REM By DA
30 REM For 32-bit machines
40 REM (c) BAU April 1993
50 :
60 MODE 13
70 OFF
80 PROCinit_sprite_area
90 PROCdemo
100 END

```

```

110 :
120 DEF PROCinit_sprite_area
130 sprite_op%=&2E
140 size%=100
150 area_size%=2*size%*size%+1024
160 DIM sprites% area_size%,dest% 32
170 !sprites%=area_size%
180 sprites%!=16
190 SYS sprite_op%,&109,sprites%
200 SYS sprite_op%,&10F,sprites%,"test
",size%,size%,13
210 SYS sprite_op%,&11D,sprites%,"test
"
220 SYS sprite_op%,&118,sprites%,"test
" TO ,,sp%
230 SYS sprite_op%,&3E TO ,,,save_area
_size%
240 DIM save_area% save_area_size%
250 ENDPROC
260 :
270 DEF PROCdemo
280 PRINT "Please wait..."
290 !save_area%=0
300 SYS sprite_op%,&23C,sprites%,sp%,s
ave_area% TO r0,r1,r2,r3
310 FOR i%=0 TO 40
320 c%=RND(255)
330 GCOL (c% AND 63) TINT (c% AND 192
)
340 CIRCLE FILL size%+RND(size%*2),si
ze%+RND(size%*2),RND(size%*4)
350 NEXT
360 FOR x%=0 TO size%-1
370 FOR y%=0 TO size%-1
380 SYS sprite_op%,&229,sprites%,sp%
,x%,y% TO ,,,,c%,c%
390 IF c%>0 AND t%=0 SYS sprite_op%
,&22C,sprites%,sp%,x%,y%,0
400 NEXT

```

```

410 NEXT
420 SYS sprite_op%,r0,r1,r2,r3
430 MOUSE ON 1
440 ORIGIN 640,512
450 MOUSE TO 300,300
460 VDU 19,0,24,&80,&80,&80
470 bank=1
480 shadow%=TRUE
490 oldb%=0
500 REPEAT
510 WAIT
520 SYS "OS_Byte",112,bank%
530 bank%=3-bank%
540 SYS "OS_Byte",113,bank%
550 COLOUR 128+&101010
560 CLS
570 MOUSE x%,y%,b%
580 IF b%<>oldb% THEN
590 oldb%=b%
600 IF oldb%<>0 shadow%=NOT shadow%
610 ENDIF
620 x%<=x%<<9
630 y%<=y%<<9
640 dest%!(0-x%
650 dest%!(4-y%
660 dest%!(8-y%
670 dest%!(12-x%
680 dest%!(16-x%
690 dest%!(20-y%
700 dest%!(24-y%
710 dest%!(28-x%
720 ORIGIN 640-16,512-16
730 IF shadow% SYS sprite_op%,&237,sp
rites%,sp%,0!,,,dest%
740 ORIGIN 640,512
750 SYS sprite_op%,&238,sprites%,sp%,
0!,,,dest%
760 UNTIL FALSE
770 ENDPROC

```

# Listing Bio1

```

10 REM >HexDump
20 REM BIO hex dump module
30 REM By Dave Lawrence
40 REM For 32-bit machines
50 REM (c) BAU April 1993
60 END
70 :
80 DEF FNhexdump_name = "Hex dump"
90 DEF FNhexdump_args = "-in * -out T
ext -send"
100 :
110 DEF FNhexdump_init
120 hex_form%=0
130 hex_width%=16
140 hex_ascii%=TRUE
150 hex_length%=16
160 PROCwrite_in_icon(wind_hand%,2,STR
$hex_width%)
170 PROCwrite_in_icon(wind_hand%,7,STR
$hex_length%)
180 PROCset_button(wind_hand%,3,ABS(he
x_form%+0))
190 PROCset_button(wind_hand%,4,ABS(he
x_form%+1))
200 PROCset_button(wind_hand%,5,ABS(he
x_ascii%+0))
210 :
220 :
230 DEF FNhexdump_mouse(mx%,my%,mb%,mh
%,mi%)
240 IF (mi%<3 OR mi%<4) THEN
250 IF (mb% AND 1) AND FNbutton_state
(mh%,mi%)>0 PROCset_button(mh%,mi%,1)
260 IF mi%<3>0 hex_form% THEN
270 hex_form%=mi%-3
280 hex_width%=VALFNicon_text(mh%,2)
290 CASE hex_form% OF
300 WHEN 0: hex_width%=hex_width%*4
310 WHEN 1: hex_width%=hex_width%*D
IV 4
320 ENDCASE
330 PROCwrite_in_icon(mh%,2,STR$hex_
width%)
340 ENDIF
350 ENDIF
360 :
370 :
380 DEF FNhexdump_key(wh%,ic%,cx%,cy%,
ch%,ci%,key%)
390 :
400 :
410 DEF FNhexdump(in$,out$)
420 LOCAL in%,out$,line$,i%,b%,str$
430 in%=OPENIN(in$)
440 out%=OPENOUT(out$)
450 togo%=0
460 hex_width%=VALFNicon_text(wind_ha
nd%,2)
470 hex_length%=VALFNicon_text(wind_ha
nd%,7)
480 hex_ascii%=FNbutton_state(wind_ha
nd%,5)
490 CASE hex_form% OF
500 WHEN 0:wide%=hex_width%
510 WHEN 1:wide%=hex_width%*4
520 ENDCASE
530 WHILE NOT EOF#in%
540 PROCourglass(PTR#in%,EXT#in%)
550 IF togo%=0 THEN
560 IF wide% MOD 16=0 THEN
570 line$="Address : "
580 FOR i%=0 TO (wide%-1) DIV 4

```

```

590 IF hex_form%=1 line$+=" "
600 FOR j%=0 TO 3
610 IF hex_form%=0 line$+=" "RIG
HT$("00"+STR$(i%*4+j%),2)
620 IF hex_form%=1 line$+=RIGHT$(
"00"+STR$(i%*4+j%),2)
630 NEXT
640 NEXT
650 IF hex_ascii% line$+=" "+STR
I$(wide%-10)/2," ")+"ASCII data"
660 PROCbput(out%,")
670 PROCbput(out%,line$)
680 ENDIF
690 PROCbput(out%,")
700 togo%=hex_length%
710 ENDIF
720 add$=RIGHT$("00000000"+STR$PTR#
in%,8)+" "
730 line$=""
740 word$=""
750 ascii$=" : "
760 i%=0
770 WHILE NOT EOF#in% AND i%<wide%
780 b%=BGET#in%
790 word$=RIGHT$("00"+STR$b%,2)+wor
d$
800 IF LENword$=hex_form%*6+2 line$+
=" "+word$:word$=""
810 IF b%<32 OR b%>127 b%=ASC"."
820 IF hex_ascii% ascii$+=CHR$b%
830 i%=i+1
840 ENDWHILE
850 IF word$<>"" line$+=" "+RIGHT$("x
xxxxxxx"+word$,8)
860 line$=add$+line$+STR$(hex_wid
th%*(hex_form%+3))-LENline$," ")
870 IF hex_ascii% line$+=ascii$
880 PROCbput(out%,line$)
890 togo%-1
900 ENDWHILE
910 CLOSE #in%
920 CLOSE #out%
930 :

```

# Listing Bio2

```

10 REM >Hex Dat
20 REM Create HexDump files
30 REM By Dave Lawrence
40 REM For 32-bit machines
50 REM (c) BAU April 1993
60 :
70 DIM q% &100,w% &1000
80 REPEAT
90 READ file$
100 IF file$<>"" THEN
110 PRINT file$
120 READ type%,olen%
130 IF type%<FFF OR type%<FFE OR t
ype%<FEB THEN
140 out%=OPENOUT(file$)
150 REPEAT
160 READ line$
170 IF line$<>"" BFUT#out%,line$
180 UNTIL line$=""
190 CLOSE#out%
200 SYS "OS.File",18,file$,type%
210 ELSE
220 line%=0
230 d$=""
240 i%=0
250 WHILE i%<olen%
260 b$=FNC
270 IF b$<="a" AND b$<="z" THEN

```

```

280 off%=EVAL("("+FNC-FNC)
290 FOR k%=0 TO (ASC(b$)-ASC"a")+2
)
300 w%?i%w%?(i%+off%)
310 i%+=1
320 NEXT
330 ELSE
340 w%?i%w%?i%+b$+FNC)
350 i%+=1
360 ENDIF
370 ENDWHILE
380 SYS "OS.File",10,file$,type%,w
%,w%+olen%
390 ENDIF
400 ENDIF
410 UNTIL file$=""
420 END
430 :
440 DEF FNC
450 LOCAL c$
460 IF d$="" THEN
470 READ d$,ch$
480 line$+=1
490 c$+=d$
500 SYS "OS_CRC",0,q%,q%+LEN(d$),1 TO
CRC%
510 IF CRC%<>EVAL("("+ch$+ch$) PRINT"Erro
r in data line "line$:END
520 ENDIF
530 c$=LEFT$(d$,1)
540 d$=MID$(d$,2)
550 :
560 :
570 DATA "Sprites",&FF9,&20C
580 DATA 0100000010a041002a09a04,A079
590 DATA 68657864756D7034a170004,FDDC
600 DATA e1Cb0C07a28AcA2Ca04000C,B678
610 DATA 1BDFFFFA04FF00000000Da,65A4
620 DATA 04DD0088888888a4B8009999,D404
630 DATA 99a0459007777777a0477005,B91C
640 DATA 555555a04550033333a0433,52A4
650 DATA e4f76449a0a4990000EEB00,RE09
660 DATA a04a86CCa8a04D0a91a04a,E107
670 DATA 18Ba1CB00558800a04a70,8C27
680 DATA B8a74a0400B8FFa04F7111,1A47
690 DATA 1111a0407bDaC8q140021,980E
700 DATA 17717717177221a0672a0,5A3C
710 DATA 612aF0721771a3F1772c067,33CD
720 DATA 371117b3Ca28f1431b34aF,FF06
730 DATA C7177b28d3C73a0Cc28q787,937E
740 DATA 337a58a5E1172a277a6AaE,8530
750 DATA 5177171317a5521a5611b6,F7E9
760 DATA Ac141173b2211a7F2127d14,9AA3
770 DATA 733731a0a91a012d3cRdC,2C02
780 DATA 312771a647777317713b781,A586
790 DATA 27121a64a4F17qF0777b14,5992
800 DATA 77aE2h14bDC12a2833CqC80,5C0C
810 DATA 0,1400
820 DATA "Templates",&FEC,&1E8
830 DATA FFFFFFFF00000000a04c072,837F
840 DATA Ca0B0C10000001a15486578,D254
850 DATA 44756D07D0204a180Aa1C,3C66
860 DATA 16030000D0b21e39b441200,7A56
870 DATA 01870702070103010C04FFC,C738
880 DATA a5805d5A3Db4D30d54b5858,D3F4
890 DATA a60b7814a7908a7D0Aa8188,4FE0
900 DATA a898Aa8988a9116200C757,A807
910 DATA 656474693A0DD0053A0D7D7b,6FFF
920 DATA 20C4e0204e204657726617,54E2
930 DATA 43ac2096Ca18aC9EaC9Aa,FC0C
940 DATA ad13DE1000767aC46aC8Aa,C4FD
950 DATA B009Ca40b78b4013b121176,CABA
960 DATA FaE475aE8aB3aA0b060180,647D
970 DATA 2f2001178aEC8D120b60C8,7B51

```

```

980 DATA aFCB6c4020179FaD4a5e40b,9A7B
990 DATA C04Ce07Cec04C656E7bC1,9D2A
1000 DATA fa0b20ba0b20ba083aA087a,F979
1010 DATA A404a4C4865782064756D70,9B7E
1020 DATA 207357475700D39300D413,D086
1030 DATA 02D390D4279465730D5372,F1E7
1040 DATA 6164696F6F66662C096E0D,DF89
1050 DATA 576F7264r1841534349490D,9318
1060 DATA 736F7074b2Eb076Ea4Cd40D,EE12
1070 DATA D,3300
1080 DATA *

```

# Listing Bio3

```

10 REM >ToneDial
20 REM BIO tone dial module
30 REM By DA & DL
40 REM For 32-bit machines
50 REM (c) BAU April 1993
60 END
70 :
80 DEF FNTonedial_name = "Tone Dialle
r"
90 DEF FNTonedial_args = "-in Text"
100 :
110 DEF FNTonedial_init
120 LOCAL col$,row$,a%,col%,row%
130 DIM dial_tone1%(12),dial_tone2%(12
)
140 col$="160167174"
150 row$="122130136142"
160 a%=1
170 FOR row%=0 TO 3
180 FOR col%=0 TO 2
190 dial_tone1%(a%)=VALMID$(col$,col
%*3+1,3)
200 dial_tone2%(a%)=VALMID$(row$,row
%*3+1,3)
210 a%+=1
220 NEXT
230 NEXT
240 PROCwrite_in_icon(wind_hand%,1,"")
250 :
260 :
270 DEF FNTonedial_mouse(mx%,my%,mb%,m
h%,mi%)
280 :
290 :
300 DEF FNTonedial_key(wh%,ic%,cx%,cy%
,ch%,ci%,key%)
310 :
320 :
330 DEF FNTonedial(file$)
340 LOCAL ns%,i%,as%,in%,ct%,dig%
350 SYS "Sound.Configure" TO i%
360 IF i%<2 VOICES 2
370 "ChannelVoice 1 WaveSynth-Beep
"ChannelVoice 2 WaveSynth-Beep
380 SYS "Sound.Obear",-2
400 IF file$="" THEN
410 PROCdial(FNicon_text(wind_hand%,1
))
420 ELSE
430 in%=OPENIN(file$)
440 PROCdial(GET$#in%)
450 CLOSE #in%
460 ENDIF
470 :
480 :
490 DEF PROCdial(ns%)
500 i%=0
510 WHILE ns%<>""
520 a%=INSTR(" 1234567890*",LEFT$(ns
,1))

```

```

530 IF a%>0 THEN
540 tone1=dial_tone1%(a%-1)
550 tone2=dial_tone2%(a%-1)
560 IF tone1%>0 vol%>0 ELSE vol%<=4FF
F80000
570 SYS "Sound_QSchedule",1%*30+5,,v
ol% OR 1,440000 OR tone1%
580 SYS "Sound_QSchedule",-1,,v
ol% OR 2,440000 OR tone2%
590 i%+=1
600 ENDF
610 d$=MID$(n$,2)
620 ENDWHILE
630 ENDPROC

```

### Listing Bio4

```

10 REM >Tone_Dat
20 REM Create ToneDial files
30 REM By DA & DL
40 REM For 32-bit machines
50 REM (c) BAU April 1993
60 :
70 DIM q% 6100,w% 61000
80 REPEAT
90 READ file$
100 IF file$<"*" THEN
110 PRINT file$
120 READ type%,olen%
130 IF type%<4FF OR type%<4FFE OR t
ype%<4FEB THEN
140 out%=OPENOUT(file$)

```

```

150 REPEAT
160 READ line$
170 IF line$<"*" BPOT=out%,line$
180 UNTIL line$="*"
190 CLOSEout%
200 SYS "OS_File",18,file$,type%
210 ELSE
220 line%=0
230 d$=""
240 i%=0
250 WHILE i%<olen%
260 b$=FNC
270 IF b$="a" AND b$<"z" THEN
280 off%=-EVAL("4"+FNC+FNC)
290 FOR k%=0 TO (ASC(b$)-ASC"a")+2
300 w%?i%w%?(i%+off%)
310 i%+=1
320 NEXT
330 ELSE
340 w%?i%w%?EVAL("4"+b$+FNC)
350 i%+=1
360 ENDF
370 ENDWHILE
380 SYS "OS_File",10,file$,type%,w
%,w%olen%
390 ENDF
400 ENDF
410 UNTIL file$="*"
420 END
430 :

```

```

440 DEF FNC
450 LOCAL c$
460 IF d$="" THEN
470 READ d$,ch$
480 line%+=1
490 $q%<d$
500 SYS "OS_CRC",0,q%,q%+LEN(d$),1 TO
crc%
510 IF crc%<EVAL("4"+ch$) PRINT"Error
r in data line "line%:END
520 ENDF
530 c$=LEFT$(d$,1)
540 d$=MID$(d$,2)
550 c$<=c$
560 :
570 DATA "Sprites",4FF9,4360
580 DATA 0100000010a0464030000054,B6B6
590 DATA a04746F6B656469616C34a1,B703
600 DATA 804e1Ca230007a28ACb0C02,CA3A
610 DATA 00000Cb14FFFFFa04FF00D,2A7
620 DATA D0DD0a04DD00BBB8a04Bb,9225
630 DATA 0099999a049900777777a0,CD69
640 DATA 4770055555a0450033333,E59A
650 DATA 3a0433e4Fa764499a049900,2C13
660 DATA EEE00a04a86Ca8Aa04DDe,4906
670 DATA 91a0418Bba1CB00558800,AC8
680 DATA a04a70Bba74a0400BFFa0,8AB8
690 DATA Ffa77a7Ac06DDDD27777b$,F65D
700 DATA 7131101301111b07D0D07D$,CF57
710 DATA 7D27Db4B2322230222202$,C1F7
720 DATA 07a14DD0Df143122221a1B,8AB7

```

```

730 DATA D1a1472c3C7755357357553,D90C
740 DATA 3a07D3a11050a617227m50a,F36E
750 DATA 11bFD150DD7Da16150a7672,C853
760 DATA c28JA0b8DmAd0a8a050aDA7D,BA63
770 DATA 27m50a8A7D72n50hDCgF0DD,6CC4
780 DATA eDCKa0eDCKa0eDCKaF30e0c,8294
790 DATA BF0FFFF0FFFFF0FFFa0407,ASD9
800 DATA 07a130FF0014a2Ap1403C04,27A
810 DATA Dq14q28aEDm78a8Cq14q14a,5FDC
820 DATA 80mB4c51p14aDEq14n78qDC,3B6F
830 DATA b9Dq14q14cF3FF,F2F6
840 DATA "Templates",4FBC,6106
850 DATA FFFFFFFF0000000a04c072,B37F
860 DATA Ca0DDa1101a1554F6F8654,CE1E
870 DATA 469616C0D7725Db244a15,FS4F
880 DATA 200700002804000002a08f3,9782
890 DATA 8b441200038707020701830,BDF3
900 DATA 10CDA4FCA58055A53Db4D30,F963
910 DATA d54b588e8e340Da7903a7D12,C3A6
920 DATA a81B6a899a4896a1319600,C86
930 DATA 01748756D6265723A0D643B,A3A6
940 DATA 007F80e202Ca7Cb203DF100,C32E
950 DATA 07C5a5D2aB918aB40a94b,13B0
960 DATA 40C2f209001C7Cb8e40bC82,DF1E
970 DATA 0bC96C65720D3037312033,DC6E
980 DATA 33120383030300D4120302D,E4AB
990 DATA 392a230D,9B38
1000 DATA *

```

## ASSEMBLY LINE

### Listing Arm1

```

10 REM >Basic1
20 REM By Dave Lawrence
30 REM For 32-bit machines
40 REM (c) BAU April 1993
50 :
60 MODE 12:OFF
70 r=0:b=k11
80 FOR col=0 TO 15
90 COLOUR col,col*r,0,col*b
100 r=k11-r:b=k11-b
110 NEXT
120 PROCsquare(640,512,256,15)
130 END
140 :
150 DEF PROCsquare(x,y,s,c)
160 IF s<4 ENDF
170 PROCsquare(x-s,y-s,s/2,c-1)
180 PROCsquare(x+s,y-s,s/2,c-1)
190 PROCsquare(x-s,y+s,s/2,c-1)
200 PROCsquare(x+s,y+s,s/2,c-1)
210 GCOL 3,c:RECTANGLE FILL x-s,y-s,s*
2,s*2
220 ENDF

```

### Listing Arm2

```

10 REM >Basic2
20 REM By Dave Lawrence
30 REM For 32-bit machines
40 REM (c) BAU April 1993
50 :
60 DIM a(100)
70 FOR i=1 TO 100
80 a(i)=RND(10000)
90 NEXT
100 PROCquick(1,100)
110 FOR i=1 TO 100
120 PRINT,a(i);
130 NEXT
140 END
150 :
160 DEF PROCquick(from,to)
170 a=from-1
180 b=to-1
190 p=a((from+to)/2)
200 REPEAT
210 REPEAT
220 a=a+1
230 UNTIL a(a)>=p
240 REPEAT
250 b=b-1
260 UNTIL a(b)<=p
270 IF a<=b SWAP a(a),a(b)
280 UNTIL a=b
290 IF a=to PROCquick(a,to)
300 IF b=from PROCquick(from,b)
310 ENDF

```

### Listing Arm3

```

10 REM >ARM1
20 REM By Dave Lawrence
30 REM For 32-bit machines
40 REM (c) BAU April 1993
50 :
60 MODE 12:OFF
70 r=0:b=k11
80 FOR col=0 TO 15
90 COLOUR col,col*r,0,col*b
100 r=k11-r:b=k11-b
110 NEXT
120 x=1:y=2:s=3:c=4:s2=5
130 sp=13:link=14:pc=15
140 DIM code 400
150 FOR pass=0 TO 2 STEP 2:P%<code
160 [OPT pass
170 .dosquare
180 STMPD (sp),{link }
190
200 STR sp,top_sp

```

```

210 BL square
220 .exit
230 LDMPD (sp),{pc }
240
250 .top_sp EQU 0
260
270 .square
280 STMPD (sp),{x,y,s,c,s2,
link}
290
300 CMP s,#4
310 BLT out
320
330 MOV s2,s
340 MOV s,s,ASR #1
350 SUB c,c,#1
360
370 SUB x,x,s2
380 SUB y,y,s2
390 BL square
400
410 ADD x,x,s2,ASL #1
420 BL square
430
440 ADD y,y,s2,ASL #1
450 BL square
460
470 SUB x,x,s2,ASL #1
480 BL square
490
500 LDMIA (sp),{x,y,s,c}
510
520 SWI 256+18
530 SWI 256+3
540 MOV R0,c
550 SWI "XOS_WriteC"
560
570 MOV R0,#4
580 SUB x,x,s
590 SUB y,y,s
600 SWI "XOS_Plot"
610
620 MOV R0,#97
630 MOV R1,s,ASL #1
640 MOV R2,s,ASL #1
650 SWI "XOS_Plot"
660
670 SWI "XOS_ReadEscapeSta
te"
680 LDRCS sp,top_sp
690 BCS exit
700
710 .out
720 LDMPD (sp),{x,y,s,c,s2,
pc}
730 ]NEXT
740 B%<640:C%<512:D%<256:E%<15
750 CALL dosquare

```

### Listing Arm4

```

10 REM >ARM2
20 REM By Dave Lawrence
30 REM For 32-bit machines
40 REM (c) BAU April 1993
50 :
60 p=5
70 x=6
80 y=7
90 a=8
100 b=9
110 array=10
120 from=11
130 to=4
140 sp=13:link=14:pc=15
150 DIM code 400
160 FOR pass=0 TO 2 STEP 2:P%<code
170 [OPT pass
180 .sort
190 STMPD (sp),{link }
200
210 STR sp,top_sp

```

```

220
230 MOV array,R0
240 MOV from,#1
250 MOV to,R1
260 BL quick_sort
270
280 .exit_sort
290 LDMPD (sp),{pc }
300
310 .top_sp EQU 0
320
330 .quick_sort
340 STMPD (sp),{link }
350
360 SWI "XOS_ReadEscapeState"
370 LDRCS sp,top_sp
380 BCS exit_sort
390
400 ADD p,from,to
410 MOV p,p,ASR #1
420 LDR p,[array,p,ASL #2]
430 SUB a,from,#1
440 ADD b,to,#1
450
460 .qs_loop1
470 ADD a,a,#1
480 LDR x,[array,a,ASL #2]
490 CMP x,p
500 BLT qs_loop1
510
520 .qs_loop2
530 SUB b,b,#1
540 LDR y,[array,b,ASL #2]
550 CMP y,p
560 BGT qs_loop2
570
580 CMP a,b
590 STRLT x,[array,b,ASL #2]
600 STRLT y,[array,a,ASL #2]
610 BLE qs_loop1
620
630 STMPD (sp),{b,from,to}
640 CMP a,to
650 MOVLT from,a
660 BLT quick_sort
670
680 LDMPD (sp),{b,from,to}
690 CMP b,from
700 MOVGT to,b
710 BLGT quick_sort
720
730 LDMPD (sp),{pc }
740
750 ]
760 NEXT
770 numbers=100
780 DIM block (numbers+1)*4
790 FOR i=1 TO numbers
800 block(i*4)=RND(100000)
810 PRINT,block(i*4);
820 NEXT
830 PRINT
840 A%<block
850 B%<numbers
860 PRINT"Sorting..."
870 CALL sort
880 FOR i=1 TO numbers
890 PRINT,block(i*4);
900 NEXT
910 PRINT

```

### Listing Arm5

```

10 REM >Debug
20 REM By Dave Lawrence
30 REM For 32-bit machines
40 REM (c) BAU April 1993
50 :
60 DEF PROCassemble_debug
70 PROCdebug_bases
80 [OPT pass
90 .debug

```

```

100 STMPD R13,{r0-r12 }
110 BIC R9,R14,&F0000003
120 .debugloop
130 LDRB R0,[R9],#1
140 CMP R0,#0
150 BBQ debugdone
160 CMP R0,#128
170 SWIT "OS_WriteC"
180 BLT debugloop
190 AND R0,R0,#01110000
200 AND R0,R0,#00000111
210 LDR R0,[R13,R0,LSL #2]
220 ADD PC,PC,R0,LSR #2
230 DCD 0
240 B type000
250 B type001
260 B type010
270 B type011
280 B type100
290 B type101
300 B type110
310 B type111
320 .debugdone
330 MOV R14,R9
340 TST R14,#11
350 BICNE R14,R14,#11
360 ADDNE R14,R14,#4
370 LDMPD R13,{r0-r12 }
380 MOVPS PC,R14
390 :
400 .type011
410 .type100
420 .type101
430 .type110
440 .type111
450 B debugloop
460 :
470 .type000 \_decimal
480 ADR R1,numbuf
490 MOV R2,#16
500 SWI "OS_ConvertCardinal4"
510 SWI "OS_Write0"
520 B debugloop
530 :
540 .type001 \_hex
550 ADR R1,numbuf
560 MOV R2,#16
570 SWI "OS_ConvertHex8"
580 SWI "OS_Write0"
590 B debugloop
600 :
610 .type010 \bin8
620 ADR R1,numbuf
630 MOV R2,#16
640 SWI "OS_ConvertBinary1"
650 SWI "OS_Write0"
660 B debugloop
670 :
680 numbuf
690 EQU 0:EQU 0:EQU 0:EQU 0
700 ]
710 ENDF
720
730 DEF PROCdebug_bases
740 decimal = 128 OR (%00 << 4)
750 hex = 128 OR (%01 << 4)
760 binary = 128 OR (%10 << 4)
770 ENDF
780 :
790 DEF FNdebug(str$)
800 LOCAL _base,_a,_b,a$
810 PROCdebug_bases
820 [OPT pass
830 BL debug
840 ]
850 WHILE INSTR(str$,"")>0
860 _a=INSTR(str$,"")
870 _b=INSTR(str$,"",_a)-_a-1
880 a$=MID$(str$,_a+1,_b)
890 CASE a$ OF
900 WHEN "" :str$=LEFT$(str$,_a)+MID
$(str$,_a+2)

```

```

910 WHEN "n","N" : str$=LEFT$(str$,
a-1)+CHR$(13+CHR$(10+MID$(str$,a+3
920 OTHERWISE:
930 CASE LEFT$(a$,1) OF
940 WHEN "g" : _base=_hex : a$

```

```

=MID$(a$,2)
950 WHEN "q" : _base=_binary : a$
=MID$(a$,2)
960 OTHERWISE : _base=_decimal
970 ENDCASE

```

```

980 str$=LEFT$(str$,a-1)+CHR$( _base
e OR EVAL$(MID$(str$,a+2)
990 ENDCASE
1000 ENDWHILE
1010 [OPT pass

```

```

1020 EQU$ str$
1030 EQU$ 0
1040 ALIGN
1050 ]
1060 ="

```

## GAMES DESIGNER

### Listing GameDes1

```

10 REM >AlienEd2
40 REM (C) BAU April 1993
90 PROCload_file(0,"Aliens")
100 PROCload_file(1,"Aliens")
250 DIM file$(1),type(1),dir$(1)
260 DIM spr$(max_path-1),com$(max_path
-1)
271 dir$=("Movement","Sprites"
490 WHEN 0 : PROCload_data(dir$(n)+
"a$)
500 WHEN 1 : PROCload_sprites(dir$(n)
+","a$)
570 SYS "OS File",5,dir$(n)+","a$ TO
a,,type,,size
700 IF MID$(line$,27,1)="" THEN
710 com$(p)=FNstrip(LEFT$(line$,14))
711 spr$(p)=FNstrip(MID$(line$,15,13
))
712 path$=MID$(line$,28)
713 ELSE
714 spr$(p)=FNstrip(LEFT$(line$,14))
715 path$=MID$(line$,15)
716 ENDIF
1300 PRINTTAB(0,ypos);FNlpad(label$,5);
";
1490 PRINT FNlpad(spr$,12);
1491 COLOUR 136
1492 COLOUR 9
1493 com$=com$(p)
1494 IF com$="" com$="*****
1495 PRINTTAB(27,31);FNlpad(com$,12);
1496 COLOUR 128
1501 :
1502 DEF FNlpad(a$,1)
1503 =LEFT$(a$+STRING$(1," "),1)
1770 WHEN x>gridx*g:
1771 IF y<2g THEN
1772 PROCcomment
1773 ELSE
1774 PROCrepos
1775 ENDIF
2280 out=OPENOUT(dir$(0)+","a$+file$)
2340 spr$=FNlpad(spr$(p),12)
2341 com$=com$(p)
2342 IF com$<>"" com$=FNlpad(com$(p),1
2)+""
2410 PROCbput(out," "+com$+spr$+" "+pa
th$)
2450 SYS "OS File",18,dir$(0)+","a$+file$
,&FFF
4890 VDU 24,gridx*g+4;2*g;1279;gridy*g;
16
5511 :
5512 DEF PROCcomment
5513 COLOUR 136:COLOUR 9
5514 IF com$(path)="" VDU 31,27,31,32,3
2
5515 com$(path)=FNalter(com$(path),27,3
1,12)
5516 ENDPROC

```

### Listing GameDes2

```

10 REM >Populate
20 REM By Antony Bruce Lytis
30 REM For 32-bit machines
40 REM (C) BAU April 1993
50 :
60 MODE 9:OFF
70 PROCinit
80 PROCinit_sblk
90 PROCclear_map
100 PROCclear_pos
110 PROCload
120 PROCedit
130 END
140 :
150 DEF PROCinit
160 size=16
170 pixlen=16384
180 maxwid=256 DIV 16
190 maxlen=pixlen DIV size
200 xsiz=320 DIV size
210 ysize=256 DIV size
220 sqr=size*4
230 max_move=256
240 DIM sprname$(256),map maxwid*maxle
n,blk 20
250 DIM used(256),pos pixlen*4,pused(m
ax_move)
260 DIM move$(max_move),mspr(max_move)
,pat$(max_move),spr(max_move)
270 game$="Test"
280 games$="Games"
290 topsize=2
300 xpos=0
310 spr=FNnewi("XOS_SpriteOp")
320 pat=0
330 null$=CHR$(13)
340 nle=1
350 spe1$=STRING$(12," ")
360 ENDPROC
370 :
380 DEF FNnewi(awi$)
390 SYS "OS_SWINumberFromString",,awi$
TO swi
400 =swi
410 :
420 DEF PROCinit_sblk
430 sbeize=HIMEM-END-32768
440 DIM sblk sbeize

```

```

450 sblk=sbeize
460 sblk=8+16
470 SYS spop,4109,sblk
480 ENDPROC
490 :
500 DEF PROCclear_sprites
510 SYS spop,4109,sblk
520 ENDPROC
530 :
540 DEF PROCload_sprites(file$)
550 SYS spop,4109,sblk,file$
560 ENDPROC
570 :
580 DEF PROCsprite_names
590 FOR s=0 TO sprites-1
600 sprname$(s)=FNsprite_name(s+1)
610 NEXT
620 ENDPROC
630 :
640 DEF FNnoof_sprites
650 SYS spop,4109,sblk TO ,,,number
660 =number
670 :
680 DEF FNsprite_name(spr)
690 SYS spop,4109,sblk,blk,20,spr TO ,
,nlen
700 blk?nlen=13
710 =sblk
720 :
730 DEF FNmatch_sprname(spr$)
740 i=1
750 matched=FALSE
760 spr$=FNlo(spr$)
770 WHILE NOT matched
780 SYS spop,4109,sblk,blk,20,i TO ,
,nlen;ok
790 IF (ok AND 1)>0 THEN
800 matched=TRUE
810 ELSE
820 blk?nlen=13
830 IF LEFT$(sblk,LEN(spr$))=spr$ TH
EN
840 matched=TRUE
850 spr=sblk
860 ELSE
870 i=i+1
880 ENDIF
890 ENDIF
900 ENDWHILE
910 =spr$
920 :
930 DEF FNaddress_of(spr$)
940 SYS spop,4118,sblk,spr$ TO ,,addr
,v
950 IF v AND 1 addr=0
960 =addr
970 :
980 DEF PROCclear_map
990 FOR i=0 TO maxwid*maxlen-1 STEP 4
1000 map[i]=0
1010 NEXT
1020 ENDPROC
1030 :
1040 DEF PROCclear_pos
1050 FOR i=0 TO pixlen*4 STEP 4
1060 pos[i]=1
1070 NEXT
1080 ENDPROC
1090 :
1100 DEF FNstrip(a$)
1110 WHILE LEFT$(a$,1)=""
1120 a$=MID$(a$,2)
1130 ENDWHILE
1140 WHILE RIGHT$(a$,1)=""
1150 a$=LEFT$(a$)
1160 ENDWHILE
1170 =a$
1180 :
1190 DEF FNfind_sprite(spr$)
1200 spr=sprites
1210 REPEAT
1220 spr=spr-1
1230 UNTIL spr=0 OR spr=sprname$(spr)
1240 IF spr=sprname$(spr) THEN =spr
1250 ERROR 1,"Unknown sprite "+spr$+"
"
1260 :
1270 DEF FNlo(a$)
1280 b$=""
1290 FOR lo=1 TO LENa$
1300 c$=MID$(a$,lo,1)
1310 IF c$>"A" AND c$<="Z" c$=CHR$(AS
C+32)
1320 b$=c$
1330 NEXT
1340 =b$
1350 :
1360 DEF FNinput(old$,x,y,max)
1370 VDU 31,x*LENold$,y
1380 a$=old$
1390 MOUSE ix,iy,iz
1400 iheld=(iz>0)
1410 *FX229,1
1420 *FX21,0
1430 ON
1440 REPEAT
1450 REPEAT
1460 key=INKEY$
1470 MOUSE x,y,z
1480 IF z=0 iheld=FALSE
1490 UNTIL key<>-1 OR (z>0 AND NOT ih
eld)
1500 IF z>0 key=13

```

```

1510 IF key=127 AND LENa$>0 VDU 127:a$
=LEFT$(a$)
1520 IF key=21 OR key=27 PRINTSTRING$(
LENa$,CHR$(127));a$=""
1530 IF key=27 a$=old$:PRINTa$;
1540 IF key=32 AND key<127 AND LENa$<m
ax a$=CHR$(key)+VDU key
1550 UNTIL key=13 OR key=27
1560 IF key=27 a$=""
1570 OFF
1580 *FX229,0
1590 =a$
1600 :
1610 DEF FNlength
1620 w=maxlen
1630 REPEAT
1640 w=w-1
1650 UNTIL w=0 OR FNnot_blank(w)
1660 =w+1
1670 :
1680 DEF FNnot_blank(c)
1690 nb=4
1700 REPEAT
1710 nb=nb+4
1720 UNTIL nb>top OR map[(c*maxwid+nb)<
>0]
1730 =map[(c*maxwid+nb)<>0]
1740 :
1750 DEF PROCfind_used
1760 used(i)=1
1770 used(0)=0
1780 next=1
1790 FOR i=0 TO length-1
1800 FOR j=0 TO across-1
1810 k=map[(i*maxwid+j)
1820 IF used(k)<0 used(k)=next:next+=
1
1830 NEXT
1840 NEXT
1850 ENDPROC
1860 :
1870 DEF PROCload
1880 VDU 30:SYS "OS_CLI","Cat "+games$
1890 ok=FALSE
1900 REPEAT
1910 PRINTTAB(0,20);"Load game:";game$
1920 new$=FNinput(game$,10,20,12)
1930 IF new$<>"" THEN
1940 IF FNok(game$+"."+new$) THEN
1950 game$=new$
1960 PROCgame(game$+"."+game$)
1970 ok=TRUE
1980 ENDIF
1990 ENDIF
2000 UNTIL ok
2010 ENDPROC
2020 :
2030 DEF PROCgame(g$)
2040 game=OPENIN(g$)
2050 REPEAT
2060 in$=FNstrip(GET$#game)
2070 UNTIL LEFT$(in$,1)<>" " AND in$<>
"
2080 FOR line=1 TO 6
2090 colon=INSTR(in$,":")
2100 type$=FNlo(LEFT$(in$,colon-1))
2110 file$=FNstrip(MID$(in$,colon+1))
2120 IFEVAL("FNload_"+type$+"("+file
$+"))"
2130 in$=FNstrip(GET$#game)
2140 NEXT
2150 CLOSE #game
2160 ENDPROC
2170 :
2180 DEF FNload_scenery(f$)
2190 PROCclear_sprites
2200 PROCload_sprites("Scenery."+f$)
2210 sprites=FNnoof_sprites
2220 PROCsprite_names
2230 =0
2240 :
2250 DEF FNload_maps(f$)
2260 in=OPENIN("Maps."+f$)
2270 mode$=""
2280 REPEAT
2290 REPEAT
2300 in$=FNstrip(GET$#in)
2310 UNTIL EOF#in OR (LEFT$(in$,1)<>"
" AND in$<>""
2320 IF in$<>"" THEN
2330 IF RIGHT$(in$,1)="" THEN
2340 mode$=in$
2350 CASE mode$ OF
2360 WHEN "Used:"
2370 used(i)=1
2380 WHEN "Map:"
2390 store=map
2400 maplen=0
2410 ENDCASE
2420 ELSE
2430 CASE mode$ OF
2440 WHEN "Used:"
2450 spc=INSTR(in$," ")
2460 spr=EVAL("a"+LEFT$(in$,2))
2470 used(spr)=FNfind_sprite(FNlo(
MID$(in$,spc+1)))
2480 WHEN "Map:"
2490 IF INSTR(in$,"-")=0 in$=-"
2500 i=0
2510 WHILE LEFT$(in$,1)<>"-
2520 store?i=used(EVAL("a"+LEFT$(
in$,2)))
2530 i=i+1

```

```

2540 in$=MID$(in$,3)
2550 ENDWHILE
2560 in$=MID$(in$,2)
2570 itop
2580 WHILE in$<>""
2590 store?i=used(EVAL("a"+RIGHT$(
in$,2)))
2600 i=i-1
2610 in$=LEFT$(in$,LENin$-2)
2620 ENDWHILE
2630 store+=maxwid
2640 maplen+=1
2650 ENDCASE
2660 ENDIF
2670 ENDIF
2680 UNTIL EOF#in
2690 CLOSE #in
2700 lastcol=(maplen*xsize)*sqr
2710 SYS spop,4118,sblk,"blank" TO ,,,
,,mode
2720 IF mode<9 ERROR 1,"Not Mode 9"
2730 SYS spop,4118,sblk,"palette" TO ,
,
pal_spr
2740 pal_dat=pal_spr+44
2750 FOR i=0 TO 15
2760 a$pal_dat+8*i
2770 COLOUR i,a71,a72,a73
2780 NEXT
2790 =0
2800 :
2810 DEF FNok(f$)
2820 SYS "OS File",5,f$ TO type
2830 =(type=1)
2840 :
2850 DEF FNload_sprites(f$)
2860 PROCload_sprites("Sprites."+f$)
2870 =0
2880 :
2890 DEF FNload_movement(f$)
2900 in=OPENIN("Movement."+f$)
2910 moves=0
2920 WHILE NOT EOF#in
2930 in$=GET$#in
2940 IF in$<>"" AND LEFT$(in$,1)<>" "
THEN
2950 IF MID$(in$,27,1)="" THEN
2960 move$=FNstrip(MID$(in$,2,12))
2970 spr$=FNstrip(MID$(in$,15,12))
2980 spr$=FNmatch_sprname(spr$)
2990 addr=FNaddress_of(spr$)
3000 IF addr=0 THEN
3010 move$(moves)=FNlo(move$)
3020 mspr(moves)=addr
3030 moves+=1
3040 ENDIF
3050 ENDIF
3060 ENDIF
3070 ENDWHILE
3080 CLOSE #in
3090 =0
3100 :
3110 DEF FNload_patterns(f$)
3120 in=OPENIN("Patterns."+f$)
3130 pats=0
3140 WHILE NOT EOF#in
3150 in$=GET$#in
3160 IF in$<>"" AND LEFT$(in$,1)<>" "
THEN
3170 IF LEFT$(in$,1)<>" " THEN
3180 spc=INSTR(in$," ")
3190 pat$=LEFT$(in$,spc-1)
3200 rest$=FNstrip(MID$(in$,spc))
3210 i=0
3220 REPEAT
3230 i=i+1
3240 UNTIL i>LENrest$ OR MID$(rest$,
i,1)=""
3250 move$=FNlo(LEFT$(rest$,i-1))
3260 move=FNfind(move$,move$())
3270 IF move<>-1 THEN
3280 pat$(pats)=pat$
3290 spr$(pats)=mspr(move)
3300 pats+=1
3310 ENDIF
3320 ENDIF
3330 ENDIF
3340 ENDWHILE
3350 CLOSE #in
3360 :
3370 :
3380 DEF FNfind(a$,a$())
3390 LOCAL i,got
3400 i=DIM(a$(),1)+1
3410 REPEAT
3420 i=i-1
3430 UNTIL a$=a$(i) OR i=0
3440 IF a$=a$(i) THEN =i
3450 =1
3460 :
3470 DEF FNload_layout(f$)
3480 in=OPENIN("Layout."+f$)
3490 IF in<>0 THEN
3500 found=FALSE
3510 WHILE NOT EOF#in
3520 in$=FNstrip(GET$#in)
3530 IF in$<>"" AND LEFT$(in$,1)<>" "
THEN
3540 IF NOT found THEN
3550 IF in$="Layout:" found=TRUE
3560 ELSE
3570 pat=FNeval(in$)
3580 a$=FNeval(in$)
3590 mem=pos+a$*4

```

```

3600 mem70=pat
3610 mem71=FNeval(in$)
3620 mem72=-1
3630 mem73=-1
3640 IF in$<>" " mem72=FNeval(in$) D
IV 2
3650 IF in$<>" " mem73=FNeval(in$) D
IV 2
3660 ENDIF
3670 ENDIF
3680 ENDWHILE
3690 CLOSE #in
3700 ENDIF
3710 layout$=f$
3720 =0
3730 :
3740 DEF FNeval(RETURN a$)
3750 spc=INSTR(a$," ")
3760 a=EVALa$
3770 IF spc=0 a$="" ELSE a$=FNstrip(MID
$(a$,spc+1))
3780 =a
3790 :
3800 DEF PROCscreen
3810 FOR col=0 TO xsz-1
3820 PROCcolumn(col,xpos DIV sqr,col*s
qr)
3830 NEXT
3840 PROCaliens(xpos DIV sqr,(xpos DIV
sqr)*xsize-1)
3850 ENDPROC
3860 :
3870 DEF PROCcolumn(column,at)
3880 addmap=column*maxwid
3890 FOR i=0 TO top
3900 SYS spoc,&122,sblk,sprname$(addr?
i),at,(i+1)*sqr
3910 NEXT
3920 ENDPROC
3930 :
3940 DEF PROCpoke(px,py,poke)
3950 map?(px*xm+py*ym)=poke
3960 ENDPROC
3970 :
3980 DEF PROCpathname(p)
3990 PRINTTAB(1,31);CHR$136;" ";FNlpad(
pat$(p),12);" ";CHR$137;
4000 ENDPROC
4010 :
4020 DEF PROClayoutname
4030 PRINTTAB(21,31);"File: ";FNlpad(la
yout$,12);
4040 ENDPROC
4050 :
4060 DEF FNlpad(a$,l)
4070 =LEFT$(a$+STRING$(l," "),l)
4080 :
4090 DEF FNrpad(a$,r)
4100 =RIGHT$(STRING$(r," ") +a$,r)
4110 :
4120 DEF PROCedit
4130 PROCscreen
4140 PROCpathname(pat)
4150 PROClayoutname
4160 MOUSE ON
4170 held=FALSE
4180 REPEAT
4190 MOUSE x,y,z
4200 IF z=0 THEN
4210 PROCflash(sel,0)
4220 move=FNmouse(20)
4230 PROCflash(sel,1)
4240 IF NOT move wait=FNmouse(20)
4250 ENDIF
4260 IF z=0 THEN
4270 held=FALSE
4280 ELSE
4290 IF held z=0 ELSE held=TRUE
4300 ENDIF
4310 IF y=sqr THEN
4320 CASE z OF
4330 WHEN 0:
4340 IF x>1279-4 PROCscroll
4350 IF x<4 PROCrcroll
4360 WHEN 2:
4370 IF sel=-1 THEN
4380 PROCplace
4390 ELSE
4400 IF FNwhat_at(x,y)=sel THEN
4410 PROCrespot
4420 ELSE
4430 PROCplace
4440 ENDIF
4450 ENDIF
4460 WHEN 4:
4470 IF INKEY-1 THEN
4480 PROCdelete
4490 ELSE
4500 PROCselect
4510 ENDIF
4520 WHEN 1:PROCdeselect
4530 ENDCASE
4540 ELSE
4550 x=x DIV 32
4560 y=y-1 (y DIV 32)
4570 IF z=0 THEN
4580 IF y=31 THEN
4590 IF x=1 PROCnewpath(-1)
4600 IF x=16 PROCnewpath(1)
4610 IF x=18 OR x=19 AND sel<-1 PR
OCadjust_status(sel)
4620 IF x=20 PROCsave
4630 ENDIF
4640 ENDIF
4650 ENDIF
4660 UNTIL FALSE
4670 ENDPROC
4680 :
4690 DEF PROCadjust_status(at)
4700 col=at-xpos DIV 4
4710 IF col=320 col=328
4720 IF col=0 VDU 7:ENDPROC
4730 IF INKEY-1 THEN
4740 mem72=-1
4750 mem73=-1
4760 ELSE
4770 IF mem72=255 THEN
4780 mem2=col DIV 2
4790 ELSE
4800 IF z=4 mem2=col DIV 2
4810 IF z=1 mem2=col DIV 2
4820 ENDIF
4830 IF mem2<255 AND mem73<255 AND
mem72<mem73 SWAP mem2,mem73
4840 ENDIF
4850 PRINTTAB(18,31);FNstatus(at);
4860 ENDPROC
4870 :
4880 DEF FNstatus(at)
4890 IF at=-1 THEN = " "
4900 mem=pos+4*at
4910 col=at-xpos DIV 4
4920 IF mem=255 THEN = "-"
4930 IF col DIV 2>mem2 THEN = "<"
4940 IF mem=255 THEN = "G1"
4950 IF col DIV 2<mem2 THEN = "G2"
4960 = "?"
4970 :
4980 DEF PROCflash(at,state)
4990 IF at=-1 OR pos(at*4)=-1 ENDPROC
5000 mem=pos+4*at
5010 fxs=4*at-xpos
5020 fys=4*mem+1+sqr
5030 CASE state OF
5040 WHEN 0:
5050 GCOL 128
5060 SYS spoc,&231,sblk,spr(7mem),fx,
fy
5070 WHEN 1:
5080 SYS spoc,&222,sblk,spr(7mem),fx,
fy,8
5090 ENDCASE
5100 ENDPROC
5110 :
5120 DEF FNmouse(wait)
5130 time=TIME
5140 xx=x:yy=y
5150 REPEAT
5160 MOUSE x,y,z
5170 PRINTTAB(1,30);FNid(x,y);
5180 move=(z=0 OR x<4 OR x>1279-4)
5190 IF z=0 held=FALSE
5200 UNTIL TIME-time>wait OR move
5210 =move
5220 :
5230 DEF FNid(x,y)
5240 IF NOT INKEY-2 THEN =spc12$+spc13$
5250 id=FNwhat_at(x,y)
5260 IF id=-1 THEN =[" =spc12$+" ..
"]
5270 ="[" =FNlpad(pat$(pos?(&id)),12)+
" =FNstatus(id)+ "]"
5280 :
5290 DEF PROCnewpath(a)
5300 pat=(pat+pat+a)MODpats
5310 PROCpathname(pat)
5320 ENDPROC
5330 :
5340 DEF PROCpointer(px,py)
5350 blk1=px
5360 blk13=py
5370 blk5=5:SYS "OS_Word",21,blk
5380 ENDPROC
5390 :
5400 DEF PROCscroll
5410 *FX 106,1
5420 MOUSE RECTANGLE -1000,-1000,2000,2
000
5430 MOUSE TO 0,0
5440 ox=0:xs=0
5450 REPEAT
5460 dx=xs-ox
5470 ox=xs
5480 MOUSE xs,ys,zs
5490 PROCpointer(x,y,ys)
5500 xs=(xs AND NOT 7) DIV 2
5510 IF xs=0 THEN
5520 IF xpos=xs+lastcol scroll=lastco
l-xpos ELSE scroll=xs
5530 IF scroll<0 THEN
5540 RECTANGLE FILL 0,sqr,1279,1023-
sqr TO -scroll,sqr
5550 PRINTTAB(18,31);FNstatus(sel);
5560 xl=(xpos DIV sqr)*xsize
5570 xp=1280-scroll-(xpos MOD sqr)
5580 x0=xl
5590 REPEAT
5600 PROCcolumn(xl,xp)
5610 xp+=sqr
5620 xl+=1
5630 UNTIL xp>1280
5640 xpos=scroll
5650 PROCaliens(x0,xl-1)
5660 ENDIF
5670 ENDIF
5680 UNTIL dx<0
5690 MOUSE RECTANGLE 0,0,1279,1023
5700 MOUSE TO x+dx,y+ys
5710 *FX 106,1
5720 ENDPROC
5730 :
5740 DEF PROCrcroll
5750 *FX 106,1
5760 MOUSE RECTANGLE -1000,-1000,2000,2
000
5770 MOUSE TO 0,0
5780 ox=0:xs=0
5790 REPEAT
5800 dx=xs-ox
5810 ox=xs
5820 MOUSE xs,ys,zs
5830 PROCpointer(x,y,ys)
5840 xs=(xs AND NOT 7) DIV 2
5850 IF xs=0 THEN
5860 IF -xs>xpos scroll=-xpos ELSE sc
roll=xs
5870 IF scroll<0 THEN
5880 RECTANGLE FILL 0,sqr,1279,1023-
sqr TO -scroll,sqr
5890 PRINTTAB(18,31);FNstatus(sel);
5900 xl=(xpos DIV sqr)*xsize
5910 xp=1280-scroll-(xpos MOD sqr)
5920 x0=xl
5930 REPEAT
5940 PROCcolumn(xl,xp)
5950 xp+=sqr
5960 xl+=1
5970 UNTIL xp>1280
5980 xpos=scroll
5990 PROCaliens(x0,xl-1)
6000 ENDIF
6010 ENDIF
6020 UNTIL dx<0
6030 MOUSE RECTANGLE 0,0,1279,1023
6040 MOUSE TO x+dx,y+ys
6050 *FX 106,1
6060 ENDPROC
6070 :
6080 DEF PROCaliens(c1,c2)
6090 al=(c1-1)*size:IF al<0 al=0
6100 a2=(c2+1)*size:IF a2>lastcol a2=
lastcol-1
6110 FOR abs=al*4 TO a2*4 STEP 4
6120 IF pos(abs)<-1 SYS spoc,&222,sblk
,spr(pos?abs),abs-xpos,sqr+4*pos?abs+1)
6130 NEXT
6140 ENDPROC
6150 :
6160 DEF PROCshow(spr,x,y,w,h)
6170 SYS spoc,&110,sblk,null$,x,y,x+w*
4,y+h*4
6180 SYS spoc,&222,sblk,spr,x,y,8
6190 ENDPROC
6200 :
6210 DEF PROCrespot
6220 mem=pos+4*sel
6230 spr=7mem
6240 old=mem
6250 xoff=4*sel-xpos-x
6260 yoff=4*mem+1+sqr-y
6270 PROCremove(sel)
6280 new=FNmove(spr,xoff,yoff)
6290 IF new=0 THEN
6300 sel=new
6310 PRINTTAB(18,31);FNstatus(sel);
6320 ELSE
6330 mem=old
6340 SYS spoc,&222,sblk,spr(7mem),sel*
4-xpos,sqr+4*mem+1,8
6350 ENDIF
6360 ENDPROC
6370 :
6380 DEF PROCplace
6390 dummy=FNmove(pat,0,0)
6400 ENDPROC
6410 :
6420 DEF FNmove(p,dx,dy)
6430 LOCAL held
6440 SYS spoc,&228,sblk,spr(p) TO ...w,
h
6450 x+=dx:y+=dy
6460 PROCshow(spr(p),x,y,w,h)
6470 ox=x:oy=y
6480 to=1
6490 MOUSE OFF
6500 REPEAT
6510 held=TRUE
6520 REPEAT
6530 MOUSE x,y,z
6540 x+=dx
6550 y+=dy
6560 IF x<0 OR y<0 THEN
6570 IF y=sqr THEN
6580 WAIT
6590 SYS spoc,&122,sblk,null$,ox,oy
6600 PROCshow(spr(p),x,y,w,h)
6610 ox=x:oy=y
6620 ENDIF
6630 ENDIF
6640 IF z=0 held=FALSE
6650 UNTIL (z=0 AND NOT held) OR y=sqr
6660 IF y=sqr THEN
6670 to=(xpos+x) DIV 4
6680 abs=pos+4*to
6690 IF abs=-1 THEN
6700 ?abs=p
6710 abs71=(y-sqr) DIV 4
6720 abs72=-1
6730 abs73=-1
6740 ELSE
6750 VDU 7
6760 to=1
6770 ENDIF
6780 ELSE
6790 SYS spoc,&122,sblk,null$,ox,oy
6800 to=2
6810 ENDIF
6820 UNTIL to<-1
6830 MOUSE ON
6840 =to
6850 :
6860 DEF PROCsave
6870 MOUSE OFF
6880 new$=FNinput(layout$,27,31,12)
6890 IF new$<" " THEN
6900 IF new$<layout$ THEN
6910 full$=games$+" "+games$
6920 out=OPENOUT" _x_"
6930 in=OPENIN(full$)
6940 WHILE NOT EOF#in
6950 in$=GET$#in
6960 IF LEFT$(in$,7)="Layout:" THEN
6970 at=LENin$
6980 WHILE MID$(in$,at,1)<" "
6990 at=1
7000 ENDWHILE
7010 in$=LEFT$(in$,at)+new$
7020 ENDIF
7030 PROCput(out,in$)
7040 ENDWHILE
7050 CLOSE #in
7060 CLOSE #out
7070 layout$=new$
7080 SYS "OS_CLI","Wipe "+full$+" F" C
"v"
7090 SYS "OS_CLI","Rename _x_" +full$
7100 PROCset_type(full$,&FFF)
7110 ENDIF
7120 pused()=FALSE
7130 FOR i=0 TO lastcol-1
7140 IF pos(i*4)<-1 pused(pos?i*4)
)=TRUE
7150 NEXT
7160 out=OPENOUT("Layout."+layout$)
7170 PROCput(out,">Layout."+layout$)
7180 PROCput(out,">TIMES")
7190 PROCput(out,"")
7200 PROCput(out,"Patterns:")
7210 FOR i=0 TO max_move
7220 IF pused(i) PROCput(out," +FNl
pad(pat$(i),13)-STR$(i)
7230 NEXT
7240 PROCput(out,"")
7250 PROCput(out,"Layout:")
7260 FOR i=0 TO lastcol-1
7270 IF pos(i*4)<-1 THEN
7280 mem=pos+i*4
7290 out$=" +FNrpad(STR$(mem,3))+ "
+FNrpad(STR$(i,5))+ " +FNrpad(STR$(mem,1,3)
7300 IF mem=255 out$=" +FNrpad(
STR$(mem*2),3)
7310 IF mem=255 out$=" +FNrpad(
STR$(mem*2),3)
7320 PROCput(out,out$)
7330 ENDIF
7340 NEXT
7350 CLOSE #out
7360 PROCset_type("Layout."+layout$,&F
FF)
7370 PROClayoutname
7380 ENDIF
7390 MOUSE ON
7400 ENDPROC
7410 :
7420 DEF PROCset_type(i$,type)
7430 SYS "OS_File",18,i$,type
7440 ENDPROC
7450 :
7460 DEF PROCput(f,$)
7470 RPUT #f,a$<CHR$10;
7480 ENDPROC
7490 :
7500 DEF PROCselect
7510 new=FNwhat_at(x,y)
7520 IF new<-1 THEN
7530 sel=new
7540 PRINTTAB(18,31);FNstatus(sel);
7550 ENDIF
7560 ENDPROC
7570 :
7580 DEF FNwhat_at(xat,yat)
7590 xat=(xat-xpos) DIV 4
7600 yat=(yat-sqr) DIV 4
7610 add=1
7620 end=0
7630 try=xat
7640 REPEAT
7650 IF try=0 AND try<lastcol THEN
7660 IF FNON(xat,yat,try) end=1
7670 ENDIF
7680 IF end=0 THEN
7690 try+=add
7700 add=add-SONadd
7710 IF ABSadd>2*sqr end=-1
7720 ENDIF
7730 UNTIL end<0
7740 IF end=1 THEN =try
7750 =1
7760 :
7770 DEF PROCdelete
7780 del=FNwhat_at(x,y)
7790 IF del<-1 THEN
7800 PROCremove(del)
7810 IF sel=del sel=-1
7820 PRINTTAB(18,31);FNstatus(sel);
7830 ENDIF
7840 ENDPROC
7850 :
7860 DEF PROCremove(s)
7870 mem=pos+s*4
7880 SYS spoc,&228,sblk,spr(7mem) TO ...
w
7890 c1=s DIV size
7900 c2=(s+w) DIV size
7910 FOR col=c1 TO c2
7920 PROCcolumn(col,col*sqr-xpos)
7930 NEXT
7940 mems=-1
7950 PROCaliens(c1,c2)
7960 ENDPROC
7970 :
7980 DEF FNON(sx,sy,s)
7990 IF pos(s*4)=-1 THEN =FALSE
8000 mem=pos+s*4
8010 SYS spoc,&228,sblk,spr(7mem) TO ...
w,h
8020 =(sx=s AND ax=s+w AND sy=mem?1 A
ND sy=mem?1+h)
8030 :
8040 DEF PROCdeselect
8050 sel=-1
8060 PRINTTAB(18,31);FNstatus(-1);
8070 ENDPROC

```

# WeServe of Hampshire

## WeServe COMPUTER SERVICES

### New Citizens

These printers are a new generation of dot matrix printers with noise levels and quality usually only found in inkjets.

### Swift 240

24pin Colour\*

Advanced 24pin printer, lots of new features. Please phone for a data sheet \*optional colour. Price with cable & paper

240 Mono £245  
240C Colour £265

All Citizen printers have 2 year warranty

### Swift 200

24pin Colour\*

Enhanced 24pin printer, SWIFT 24E plus: Extra type faces & features. Please phone for a data sheet \*optional colour. Price with cable & paper

200 Mono £195  
200C Colour £225

### Citizen 120D+

with cable & paper.

£115

### Canon BJ-10ex

360dpi inkjet printer with cable & paper.

**New Price** £199

### Printer Packs

All printers are supplied with a printer pack consisting of printer paper and a connection cable.

### Free of charge

A stand is £5.00 extra (with a printer)

### Philips CM8833 MK2

Stereo Medium Res, with cable, £215

Colour Mono, no cable £211

### 8271

disk controller chip  
£38.26 + VAT

### Archimedes

We stock the full range of Acorn computers. Teachers and Educational Discounts are available on most micros.

If you want free on site service on A3010's as Dixons offer we can provide it for.

If you want 10% off other peripherals with Archimedes as Watford offer we can do that.

We are able to match most offers on Acorn products and provide real customer service. First class customer service before & after sales try us today.

Phone for our 70 page catalogue. All prices include 17.5% VAT

EDUCATIONAL AND GOVERNMENT ORDERS WELCOME.

All products have a 30 day money back & 12 month warranty.

Prices are subject to variation without prior notification.

Please phone for express clearance of cheques.

Established 7 years. 3 minutes from M27 Junction 11.

Free Parking. Open 9 to 5.30 Monday to Friday & 9 to 5 Saturday.

Postage 94p or £3.53. Securicor £6.46 Securicor AM £11.75

**WeServe**

Larger items delivered by Securicor

### Laser Printers

### Special Offers

Epson ELP8010 ..... £895  
HP Laserjet 4 ..... £989  
HP Laserjet 4M PS ..... £349  
OKI OL830 PostSc ..... £899  
Canon LPB8-4 PostS ..... £989  
Panasonic KXP4410 ..... £419  
Panasonic KXP4430 ..... £579

Laser prices exclude VAT

### Deskjet 500

HP 300dpi inkjet printer. Laser quality at dot matrix price. 3 year warranty. With cable & paper

£325

### Deskjet Colour

300dpi colour inkjet printer. Colour laser quality at 1/10 of the cost. 3 year warranty. With cable & paper

£419

### Deskjet 500C

HP 300dpi inkjet printer. Colour laser quality, with colour and black cartridges resident. 3 year warranty. With cable & paper

£529

### All prices include VAT

(Unless stated otherwise)

### Star SJ-48

360dpi inkjet printer with cable & paper

£199

### Star LC100

Spin colour with cable & paper.

**New** £159

### Star

LC20 Mono 9pin ..... £119

LC200 Colour 9pin ..... £179

LC240 Mono 24pin ..... £185

LC24100 Mono 24pin ..... £175

LC24200 Colour 24pin ..... £249

Prices include VAT cable & paper

### SONY DISKETTES

SONY branded

(lifetime warranty)

(100% certified error free)

10x 3.5" DS/DD 135tpi ..... £7.50

50x 3.5" DS/DD 135tpi ..... £32.30

100x 3.5" DS/DD 135tpi ..... £59.93

250x 3.5" DS/DD 135tpi ..... £141.00

1kx 3.5" DS/DD 135tpi ..... £540.50

### DISKETTES

SONY/DYSAN bulk

(lifetime warranty)

(100% certified error free)

10x 3.5" DS/DD 135tpi ..... £5.95

50x 3.5" DS/DD 135tpi ..... £21.86

100x 3.5" DS/DD 135tpi ..... £39.60

250x 3.5" DS/DD 135tpi ..... £94.88

1kx 3.5" DS/DD 135tpi ..... £379.53

40x 3.5" Disk box with lock ..... £5.49

100x 3.5" Disk box with lock ..... £7.50

Carriage on 50+ disks £3.53

Educational Specialist. Established 7 years.

Acorn Educational Dealer. Nationwide Service.

APR 93

Tech. Support 647400.



Larger items delivered by Securicor



Acorn/User Dept.  
40-42 West Street  
Portchester Hants  
PO16 9UW  
Tel: 0705 647000

**WeServe Best for service**

### COMPUTER CONCEPTS

## COLOUR CARD

NOW AVAILABLE AT ONLY - £219.00

### COMPUTER CONCEPTS

## LASER DIRECT HIRES 4

NOW ONLY £839.00

### THE FULL RANGE OF NEW COMPUTERS FROM ACORN

Computer Concepts

FaxPack

Laser Direct HiRes 8

BJC 800 Colour printer

and driver and lead

BJ10ex printer, + turbo

driver and lead

Calligraph 600 - 4 ppm

Calligraph 600 - 12 ppm

Express Laser Printer

phone  
for best  
prices

Calligraph TQ 1200

Very High Resolution £4250.00

Scanlight Professional £ 509.00

Scanlight A4 with

sheetfeeder £ 345.00

Scanlight Junior 256 £ 179.00

ARTWORKS £ 129.00

Impression 2.1 £ 119.00

Impression Junior £ 65.00

Impression Bus. Supp. £ 35.00

Compression £ 35.00

Pipedream 4 £ 148.00

Squirrel Database £ 109.00

PRICES ARE EXCLUSIVE OF V.A.T. AND POSTAGE

FOR THE BEST PRICES ON THESE AND YOUR OTHER  
HARDWARE / SOFTWARE REQUIREMENTS  
PLEASE PHONE US ON 0689 838819

## CHELSEFIELD PUBLICATIONS,

2 BUCKS CROSS COTTAGES,  
CHELSFIELD VILLAGE,  
ORPINGTON,  
KENT. BR6 7RN

TELEPHONE 0689 838819

FAX 0689 872127



**Micro  
Laser Designs**

**Bishop Sutton  
Bristol AVON  
BS18 4UJ**

A3010 Family Solution ..... £ 420.00

A3010 Learning Curve ..... £ 670.00

A3020 ..... £ 740.00

A3020 60Mb H/D ..... £ 890.00

A4000 Home Office System ..... £ 990.00

A4000 80Mb H/D System ..... £ 940.00

A5000 2M HD 80 Multiscan ..... £ 1390.00

A5000 Learning Curve ..... £ 1430.00

A5000 4M HD 120 Multiscan ..... £ 1590.00

A540 ..... £ 1990.00

A4 2M FD ..... £ 1390.00

A4 4M HD 60 ..... £ 1690.00

Please phone for different system configuration

(Printer, Monitors Etc)

OUR LATEST FREE CATALOGUE IS NOW  
AVAILABLE CONTAINING:

- RAM UPGRADES • RISC OS 3 • SCSI •
- MONITORS PRINTERS • HARD DISCS •
- DIGITISERS • CD ROM • GAMES •

Please send your name and address to obtain a  
copy, you could even win  
**ARTWORKS!**

All offers subject to availability.

Callers by appointment only.

Prices and specifications may change without notice.

LaserDirect Hires 8 ..... £1279.00

LaserDirect Hires 4 ..... £ 899.00

LaserDirect Hires 4 with cassette ..... £ 989.00

LaserDirect Card for LBP-4 ..... £ 329.00

LBP-4 Toner & Drum ..... £ 55.00

LBP-8 Toner & Drum ..... £ 65.00

BJC800 colour, driver & lead ..... £1499.00

BJ10ex, driver & lead ..... £ 249.00

FAXPACK ..... £ 279.00

Scanlight Professional ..... £ 529.00

with SCSI ..... £ 699.00

ScanLight 256 ..... £ 179.00

Calligraph TQ1200 A3 Laser ..... £4295.00

Cut Sheet Feeder ..... £ 250.00

Additional Paper Tray ..... £ 425.00

Toner (30,000 pages) ..... £ 169.00

Drum (20,000 pages) ..... £ 299.00

ArtLaser 600 12ppm Laser ..... £1349.00

State Machine G8 Graphic Card ..... £ 249.00

CC/Wild Vision Colour Card ..... £ 249.00

CD ROM package incl. SCSI card,

leads, speakers, Creepy Crawlies,

Grooves & Image Warehouse ..... £ 649.00

(Other packs available)

Impression II ..... £ 124.00

Business Supplement ..... £ 44.00

Impression Junior ..... £ 79.00

ArtWorks ..... £ 139.00

Compression ..... £ 39.00

Equator ..... £ 44.00

ShowPage (NOT-RISC OS 3) ..... £ 129.00

### IMAGESSETTING SERVICE

Your Impression II, Artworks, Sprite, DrawFiles etc. output to Bromide or Film up to  
A3 size with crop marks. Resolutions of up to 2400 dpi available.  
MONO & COLOUR LASER PRINTING UP TO A3

**Acorn**  
Publishing Systems  
Authorised Dealer

Acorn DTP Systems tailored to your exact requirements.  
Complete systems for DTP, Graphic Design and profes-  
sional printers (including direct plate printing).

Carriage free, please add VAT @ 17½ %

**& FAX (0761) 453308**



● Hitachi 12in black and white industrial monitor, ideal for BBC B - £45. Contact T Medlar, Chesterfield. Tel: (0246) 205546

● Master 128, reference manuals 1 and 2, Welcome guide and disc, View guide, InterView, excellent condition - £160. Contact M Roberts, Gwynedd. Tel: (0286) 880997

● BBC Master, extra manuals - £199, Viglen twin drives in monitor bridge, mains powered - £99, Morley AA board with four 32k Roms fitted - £30. Contact H White, Wirral. Tel: 051 342 4018

● Electron, Plus 1, Plus 3, green monitor, tape deck, View and Viewsheets Rom, Database, graphs and charts, manuals and various books - £125. Contact M Thompson, Tyne and Wear. Tel: 091 416 9187

● BBC B, 32k, Acorn DFS, twin Cumana disc drive, 40/80 track switchable, two joysticks, manuals, cables, lots of software - £190. Contact Mr C Starge, Reading. Tel: (0734) 862354 eve

● Wanted: For an Acorn Electron, fitted with a Electron Plus 1, a 3.5in pres ADFS disc drive and advanced plus 3MKII interface. Contact Mr D Scott, Derby. Tel: (0332) 672032

● A3000, 1Mb Ram, colour monitor, stand, all original discs, manuals - £600 + p&p ono. Contact Mr J Aylwin, Hemlock. Tel: (0823) 680111 after 6pm weekdays.

● BBC B Issue 7, 40/80 disc drive, Interword, Screen dump, Logo, other software and books, excellent condition - £200. Contact Mr T Lowden, Haywards Heath. Tel: (0444) 415286

● Master 128, wordprocessor and spreadsheet, Elite, Repton, Ravenskull, Strikers Run, Ransack, Microvitec cub colour monitor, manuals - £250. Contact Mr C Callegari, London N21. Tel: 081-360 7703

● Acorn DTP - £35, First Word Plus V2 - £35, Genesis - offers, Ventura Publisher V1 - £50. Wanted: Pipedream for Archimedes. Contact Mr R Shuffelbottom, Hertford. Tel: (0992) 558965

● A3000, 2Mb Ram, IDE internal hard drive 20Mb, Risc OS 3.1, colour monitor and stand, excellent condition - £900. Contact Mr C Jacknelle, Cardiff. Tel: (0222) 454055

● Printmaster Rom and Master file II database (disc), never used, BBC B compatible - £10 each. Contact Mr J Wood, Kent. Tel: (0732) 845828

● Electron 64k, Plus 3, EZP second processor, Seikosha GP100A printer, games, magazines, books, loads of software - £250 ono, will split, list available. Contact Mr J Hoban, Cumbria. Tel: (0228) 401918

● BBC B Issue 7 with 40/80 double density disc drive, manuals and software - £200 ono. Contact C Pollard, Glos. Tel: (0285) 860435

● BBC B, Issue 7, excellent condition, hardly used - £75 ono. Contact J Chaloner, Brighton. Tel: (0273) 305300

● BBC B 32k, dual disc drive, Epson printer, Wordwise Plus, Mega Rom 3, software, Aries B12 board, joysticks. Contact R Easter, Surrey. Tel: 081-660 3797

● Master 128, single 40/80 disc drive, colour monitor, Panasonic KX1080 printer, teletext adaptor, mouse, joystick, Quest Paint - £500 ovno. Contact J Allen, London N19. Tel: 071-263 8823

● A3000, Acorn colour monitor, stand, 5.25in interface and drive, joystick, manuals, application discs, Artisan games, boxed, excellent condition - £700. Contact Mr M Jakeman, Coventry. Tel: (0203) 311382

● A3000, 2Mb Ram, TV modulator, Panasonic KX-P1081 printer, Genesis, Interdictor, Superior golf, other software including PD, (original boxes and manuals, perfect condition - £650. Contact Mr S Deb, Essex. Tel: 081-517 0152

● BBC B, 32k, Acorn DFS and single disc drive, tape deck, over 50 cassette games and many books - £100. Contact Mr D Searson, Surrey. Tel: (0306) 712644

● For information about the Archimedes Users club contact Mr J Michalski, 6 Furzeland House, Sheephouse Way, New Malden, Surrey KT3 5PH

● Master 128, Cumana 40/80 double 5.25in disc drive, Microvitec 1431, Trackerball - £300. Contact D Wilson, Cleveland. Tel: (0429) 267 071 ext 231

● Master 128, extra Roms, Midi interface, M500 synthesiser, M400 keyboard, 12 channel expander, 9-pin printer, 5.25in disc drive - £450, 65CO2 co-processor - £50. Contact Mr S Faux, 18 Lydon House, Dobson Road, Crawley, West Sussex RH11 7VQ.

● Archimedes 420/1 4Mb, 52Mb hard drive, 30Mhz Arm 3, colour monitor, lots of software, Integrex colour monitor, may split - £900 ono. Contact Mr L Scott-Mackay, Edinburgh. Tel: 031-447 3770

● A3000, 2Mb, colour monitor, stand, boxed with original manuals etc, loads of games, PD software, too many to list, magazines, mint condition. Contact Mr A Wakefield, Crewe. Tel: (0270) 664360

● A3000, 4Mb Ram, Risc OS 3.1, Acorn colour monitor and stand, good condition - £500. Contact Mr A Bush, London E15. Tel: 081-472 7874

● Archimedes 310 with OS 2.0 upgrade and Philips RGB monitor, boxed, manuals etc, 1st Word Plus, Artisan, programmers reference manuals - £450. Contact Mr D Hendon, Guildford. Tel: (0483) 64327

● UK and world wide contact wanted to exchange PD/tips etc. 100% reply. Contact Mr C Dyer, Cirencester. Tel: (0285) 659872

● A305, 2Mb Ram, 47Mb hard disc, Oak 16 bit Scsi card, four slot backplane, Risc OS 2, monitor, PRM, PC Emulator, Word Perfect 5.1 etc, software, books, magazines - £650. Contact Mr S Brookes, London SW16. Tel: 081-677 7320

● Archimedes A310, Acorn colour monitor plus lots of serious and fun software, boxed as new - £550. Tel: (0206) 872868/865413

● A3000, colour monitor, original manuals and discs, Paces Inteligent modem and Hearsay communications software, all boxed as new - £650 ono. Contact Mr J Albery, Essex. Tel: (0376) 326305

● Voltmace Delta-Cat joystick - £10, mouse/joystick splitter - £10, both as new. Contact A Smith, Derbyshire. Tel: (0773) 825012

● Wanted: Plus 1 interface and disc drive for Acorn Electron around £50, also most Electron software wanted. Contact Mr D Edwards, Cleveland. Tel: (0642) 479837 after 4pm

● Wanted: BBC B, DFS (or DFS upgrade chip). Contact Mr L Spedding, Cumbria. Tel: (0228) 32820

● Master compact colour system, Amx mouse and Superart, PMS Publisher with fonts, various games, manuals, original packaging - £299. Contact Mr A Priest, Nottingham. Tel: (0602) 269305

● Master 128 with Roms, Viewsheets, View, Wordwise, Spellmaster, Intersheet, 20Mb hard disc, 40/80 disc drive in monitor stand, user friendly - £295 ono. Contact E Williams, Kent. Tel: (0474) 853534

● Master 512k, Ms Dos, 5.25in and 3.5in disc drive, Cub medium resolution monitor, lots of software, books and boxes - £400 ono. Contact Mr R Connett, Plymouth. Tel: (0752) 706872

● Watford MKII hand scanner A400 series - £70. Contact Mr M Bodley, Lincoln. Tel: (0522) 720713

● BBC B, 40/80 disc drive, Watford DDFS, colour monitor, over seventy games including Exile, Elite, Wordwise Plus - £250. Contact Mr A Rodgman, Bristol. Tel: (0761) 462810

● A3000, 2Mb Ram, original manuals, applications discs - £350 ono. Contact Mr A Cargill, Southampton. Tel: (0704) 536464 evenings.

● Archimedes A420/2, 40Mb hard disc, 2Mb Ram, Philips colour monitor, mouse, boxed, manuals, software - £750, also Canon BJ-10e printer, nearly new - £200. Contact Mr D Sanderson, Derbyshire. Tel: (0457) 865913

● BBC B, Winchester hard drive, 1Mb Ram disc, floppy disc drive, various other Roms - £280. Contact Mr D Mawdsley, Macclesfield. Tel: (062) 427272

● Wanted: Midi expansion card for Archimedes. Contact Mr G Delany, Reigate. Tel: (0737) 240997 after 5pm

● Master 512k, 280 processor, Taxan colour monitor, Cumana 40/80 double disc drive, Epson FX80 printer, manuals, discs, Overview, Wordwise, Gem, games, excellent condition - £400. Contact N Penty, Woking. Tel: (0483) 764904

● A3000, Learning Curve, dual disc drive, colour stereo monitor, 1st Word Plus, PC Emulator, Genesis, Articulate, Hostages, joystick interface, mouse, one year old - £600. Contact Mr A Yardley, Harrogate. Tel: (0423) 562709

● Master 128, dual disc drives, printer, DTP, mouse, Viewspell, Smart Cartridge, ADT, many games, all manuals and much more - £350. Contact Mr G Key. Tel: 061-442 5158

● A3000, Philips CM8833 colour monitor, software, Impression DTP plus various arcade games, Interdictor etc. Contact Mr Campbell, Cornwall. Tel: (0637) 872201 ext 7733

● A3000, 2Mb, Learning Curve package, still boxed, as new, includes colour monitor, manuals, various software, cost £950 new, accept - £600 ono. Contact Mr D Stevenson, Kent. Tel: (0304) 380245

● BBC B, DFS, disc drive, VDU, View, manuals, games, joystick - £200. Contact Mr C Watts, New Milton. Tel: (0425) 613684

● Master compact with second disc drive and Pal TV adaptor also Dump Out 3 Rom fitted - £300. Contact W Candlish, Dunfriesshire. Tel: (0461) 40648

● BBC B Issue 7, Watford DDFS 1.54 track, data recorder, 183 games - £195, Amx Superart, mouse - £35, Wordwise Plus, Wordaid - £25, double sided disc drive 40/80 track - £40, everything - £270 ono. Contact Mr G Frouge, Gwent. Tel: (0633) 265145

● Master 128, 40/80 twin disc drive in console, monitor, mouse, software, manuals - £260. Contact Mr M Follows, Derby. Tel: (0332) 824562

● Star LC200 colour printer, lead and driver, boxed, little use - £125, also 3.5in Cumana external disc drive for A3000 - £70. Contact Mr A Taylor, Essex. Tel: (0277) 630948

● ST506 hard disc controller module - £40, BBC Roms, Forth and Conquest - £15 each. Contact Mr M Smith, Stamford, Lincs. Tel: (0780) 54029

● Wanted: 5.25 in disc drive for BBC B. Contact Mr or Mrs Van Dorp, Woking. Tel: (0483) 720069

● BBC B, MCP1.01, View 3.0, DFS 1.2, twin discs, colour monitor, modem, printer, wordprocessor, database, spreadsheet, BBC Basic Z80, games, discs, paper, ribbons, desk - £400 or separately. Contact Mr M Mills, Basingstoke. Tel: (0256) 892001

● Hybrid Music 5000 synthesiser and 4000 keyboard for BBC B, B+, Master, with 165 instruments, manuals, cover, excellent condition - £150. Contact Mr P Seale, Burgess Hill. Tel: (0444) 870828

● A3000, 2Mb, Acorn colour monitor, stand, Pipedream 3, 10 floppy discs, hardly used, boxed - £550, Epson LQ860 colour printer, cut sheet feeder/tractor, two boxes paper, never used - £500 ono. Contact H Baldwin, Portsmouth. Tel: (0705) 818126

● Archimedes A440, colour monitor, 4Mb Ram, 20Mb hard disc, Risc OS, no manuals, no software, hence - £895 ono. Contact R Grewal, London E17. Tel: 081-531 9108

● Master 512, colour monitor, Viglen case, 5.25in disc drive, mouse, joystick, Teletext, Gem, View, Spellcheck, Educational, games, books, manuals, mags - £375. Contact Mr R Smart, Surrey. Tel: 081-393 2296

● Master 128, colour monitor twin 40/80 double sided disc drive, Taxan printer, Spellmaster, Viewstore, Amx, mouse Superart etc, other software, manuals - £450. Contact Keeling, Leicester. Tel: (0533) 864665

● A3000, Philips monitor, printer, Emulator, 1st Word Plus, Home Accounts, magazines - £525, selection of 20 games including Lemmings, Elite - £100. Contact J Cunningham, Letchworth. Tel: (0462) 678 566

● Wanted urgently: Watford 30Mb Winchester, also Shibumi Problem Solver, good PC software. Contact Mr C Game, Essex. Tel: (0621) 815162 anytime

● A3000, upgraded (2mb), Philips colour monitor, Spreadsheet, word processor - £625 ono. Contact R John, West Glamorgan. Tel: (0639) 642954

● A3000, colour, 2Mb serial, Impression II, Pipedream, PC Emulator, Euclid etc, games, lots of PD software - £650. Contact Mr R Rainthorpe, Lincoln. Tel: (0673) 885293

● BBC B, disc drive, monitor, Wordwise word processor, Spellmaster Rom and printer - £300. Contact Mr Fitzgerald, Middlesex. Tel: 081-941 2853

● A3000, Learning Curve, Philips colour monitor, Citizen Swift printer - £600. Contact Mr A Williams, Gwynedd. Tel: (0286) 830890 eve

● Unwanted PC emulator, single and multitasking 1.8 version, all discs and manuals, offers or swap for joystick interface (A3000) and joysticks. Contact Mr T Morrison, Lincoln. Tel: (0522) 723266

● BBC B Issue 7, Opus Challenger 526k, double sided disc drive, Morley teletext, double plinth, mouse, Watford sideways Rom/Ram tapes, discs, Roms, books, bargain - £260. Contact Mr N Love, Newbury. Tel: (0635) 34891

● BBC B, Watford DFS, disc drive, colour monitor, ATPL Rom board with View, Amx, Superart, assorted games and books - £250 ono. Contact Mr R Lucas, Berkshire. Tel: (0734) 303117

● A5000, 40Mb hard disc and compression, Acorn monitor - £1000 ono, BBC Laser Vision Rom player - £80. Contact H Bowman, Surrey. Tel: 081-948 1540

● Master 512k, two 40/80 track disc drives, joystick, tape deck and manuals, over 50 software packages, 9 pin NLQ printer, a bargain - £500 ono. Contact Mr O Digby, Canterbury. Tel: (0227) 766289

● Star NL10 printer - £85. Contact Mr S Alg, London SW15. Tel: 081-811 9398

● Archimedes 410/1, 50Mb hard drive, 4Mb Ram, Taxan 770+ low resolution multisync monitor, PC Emulator, second drive interface, games - £1100. Contact Mr J Phipps, Kent. Tel: (0634) 235450 evenings

● A3000, stereo monitor, 4Mb Ram, 20Mb hard drive, serial upgrade, original boxes, manuals, discs, tuition - £800 ono. Contact Mr P Rawson, Northumberland. Tel: (0434) 685361 daytime, 685387 evenings

● A3000, 4Mb, serial upgrade, Acorn colour monitor and stand, Wildvision, three-module expansion case, all boxed with manuals - £650. Contact Mr G Rhodes, Doncaster. Tel: (0302) 722781

● BBC B with Acorn tape drive, over 40 games and other tapes, also books - £140. Contact Mr J Dobson, Coventry. Tel: (0203) 457244

● Master Turbo, Microvitec 1451 monitor, dual 40/80 drives, plus extra manuals, Roms and programs - £400. Contact M Robertson, Aylesbury. Tel: (0296) 23124

● BBC B, colour monitor, 80 track double disc drive, Epson printer, View, games, leads, manuals, covers - £240. Contact D Berry, London N2. Tel: 081-455 8788

● A5000, 4Mb Ram, 40Mb internal hard drive, Acorn SCSI card (including CDFS), Acorn multisync monitor and all manuals, excellent condition - only £1195. Contact Mr A Nelson, Surrey. Tel: (0252) 737630 office hours

● BBC keyboard - £25 ono, Microvitec 1431 monitor, very good condition - £125 ono. Contact C Hodgson, Cheshire. Tel: 051-424 1957

● Wanted: Plus 1 and Plus 3 suitable for Acorn Electron, all must work. Contact Mr S Reid, Nottingham. Tel: (0602) 226478

● Master 128k, 40/80 disc drive, View, Viewsheets, Amx Superart and mouse, manuals, software - £150 ono. Contact C Hayman, Surrey. Tel: (0483) 284253 ISO Pascal Rom cartridge for Electron - £25, Sanyo colour monitor for BBC/Electron - £30. Contact Mr S Roberts, Essex. Tel: (0277) 353769

● Wanted: Heritage program for BBC. Contact W Shepherd, Lincs. Tel: (0507) 578 612

● A3000, Acorn colour monitor, original manuals and application discs, Panasonic KXP1081 - £700. Contact Mr J Flaherty, Herts. Tel: (0992) 468521

● Microvitec cub 1441 high resolution colour monitor, practically unused, boxed - £135. Contact Mr J Connelly, Hitchin. Tel: (0462) 712061

● M1009 Brother dot matrix printer, instruction manuals - £55. Contact W Parrott, Berks. Tel: (0734) 734071

● Acorn CV4, Assembler V2, PC Emulator V1.8, Beebug C Development, all manuals, all perfect, all cheap. Contact L Lewis, Gwent. Tel: (0873) 853538

● BBC B, Challenger Ram, 5.25in disc drives, 32k Shadow and 128k Rom/Ram boards, mouse, Roms etc - £150. Contact J Marshall, Leeds. Tel: (0532) 755756

● A3000, 2Mb, Acorn colour monitor, 5.25in 800k disc drive, A3000 interface with discs and box, games, 1st Word Plus, boxed - £620. Contact Mr M Folkard, Northumberland. Tel: (0670) 75) 265

● Master 128, monochrome monitor, Cumana double disc drive, Panasonic KX-P1081, printer, Interword, Intersheet, books - £300. Contact R Paton, Milton Keynes. Tel: (0908) 648815

● A3000, OS 3.1, 2Mb Ram, Acorn colour monitor, stand, Learning Curve package, excellent condition, original packaging - £650 ono. Contact Mr d Gibson, St Albans. Tel: (0727) 867873

● A3000, 2Mb upgrade with Acorn colour monitor, Citizen Swift 9 pin dot matrix printer with colour option software and all manuals - £690 ono. Contact Mr A Day, Wakefield. Tel: (0924) 373159

● BBC B, encased in Viglen housing with twin 40/80 disc drives, separate keyboard, Solidisk sideways Ram, cassette, Interword, Intersheet, manuals, games - £350. Contact Mr P Ganuszko, Kent. Tel: (0474) 702961

● Master 512, twin 40/80 track double sided disc drives in Viglen case, colour monitor, Amx Stoppress, Superart, Design, Max, Co-Pro adaptor, Spellmaster, Viewstore, Roms, all manuals Questpoint - £650, will split. Contact Mr D Walker, Westwoodside. Tel: (0427) 753391

● Master 512, Microvitec 1451, dual 40/80 track drives, mouse, Viewstore Rom, manuals, 20 games, Mini office and Fleet Street Editor - £395. Contact A Baker, Cambridge. Tel: (0954) 780073

● Samsung 12in VGA mono monitor, model ML2611U, 18 months old, excellent condition, ideal for home word processing, spreadsheeting etc - £55. Contact Mr R Grant, Newcastle upon Tyne. Tel: 091-285 0097 evenings

● A3000, 2Mb, Acorn colour monitor, user/midi port and software - £600, Clares Armadeus, mono sampling card and software - £100. Contact Mr C Townsend, Bracknell. Tel: (0344) 412062

● BBC B, Issue 7, Z80, Torch twin double sided 80 track disc drives, various software, books, offers. Contact Mr P Turner, Grantham. Tel: (0476) 60840

● A410, 4Mb Ram, 40Mb drive, Pipedream 3, PC Emulator 1.2, colour monitor - £900 ono. Contact Mr G Carr, London N10. Tel: 081-883 8535

● 1st Word Plus release 2, all manuals, discs - £35, Risc OS 2, all manuals etc - £10. Contact Mr T Hopson, London E11. Tel: 081-989 8738

● A3000, 2Mb Ram, colour monitor, PD software - £550 ono. Contact Mr P Triner, Huddersfield. Tel: (0484) 510214

● BBC B, twin 40/80 5.25in disc drive, games, software, manuals, leads - £200. Contact Mr J Lemmer, Norfolk. Tel: (0263) 861321 after 8.30pm

● 6502 second processor - £60. Contact Mr G Hallam, Worcester. Tel: (0905) 354740 after 6pm

● BBC B, 5.25in double disc drive, black/white TV monitor, manuals, many extras - £100 ono. Contact J Harrington, Farnborough. Tel: (0252) 548893

● BBC B, Issue 7, Viglen cased twin drive, ATPL board, View, Viewsheets, Replay, Quest Paint, mouse, joysticks, Okimate colour printer, recorder, educational games software - £250. Contact R Hartley, Lichfield. Tel: 90543) 264241

Due to a mighty backlog of free ads, there is no coupon this month. Please do not send in any ads until the coupon reappears. Until then no ads will be accepted. Normal service will be resumed as soon as possible.

## High performance dual serial card £79

This allows serial comms at up to 115,200 baud, with FIFOs for maximum efficiency. If you have a fast modem, you need this! Works with ARCterm 7 & ARCbbs. (please call for information about compatibility with other packages).

## v22bis (2400 bps) FaxModem bundle £269

BT Approved Pace FaxModem, ARCterm, ARCfax, and a cable. All you need!

## v32bis (14400 bps) FaxModem bundle £349

Twincom v32bis FaxModem (NOT BT APPROVED), ARCterm, ARCfax, and a cable. Very quick! (best with a serial card)

## 20Mb Floptical disk systems from £349

DOS 1.44Mb and Acorn 1.6Mb capable.

Works with practically all SCSI cards.

## ARCterm 7 £68

## ARCbbs (3 line version) £85

## PC Keyboard/mouse interface £89

## A5000 - 120Mb 2nd hard disk £279

## Fujitsu 496Mb SCSI (over 2Mb/sec) £899

## External 120Mb Magneto-Optical £999

Insured delivery on storage systems £10+VAT. Education is entitled to a 5% discount on all our own products.

Please add VAT at 17.5% to all prices. Plastic welcome.

## THE SERIAL PORT



Our shop in Wells should be open, if you are thinking of visiting, call first!

The Serial Port  
Burcott Manor, Wells,  
Somerset, BA5 1NH

Telephone (0749) 670058  
Fax (0749) 670809  
Modem (0749) 670030  
ISDN (0749) 670883

## BEEBUG Magazine

*the only magazine still devoted solely to the BBC Micro and the Master 128*

### Still going strong in its 11th year of publication

BEEBUG was the first magazine ever published to cater for BBC enthusiasts, and is still as popular after 10 successful years.

BEEBUG offers a wealth of information: from articles on how to write Basic programs to ready-to-use utilities and complete stand-alone applications. BEEBUG also offers frequent 'fun' programs and entertaining games.

If you want to find out more, write to us for a **FREE** BEEBUG magazine or phone on **0727 40303**. Please quote this advertisement to receive your free magazine.

RISC Developments, 117 Hatfield Rd, St. Albans, Herts AL1 4JS

## C.U. Electronics Ltd.

*Computers, Upgrades & Electronics*

65a Middle Hillgate, Stockport SK1 3EH

Tel: 061 476 0576. Fax: 061 477 2361

### Internal Hard Drive for A3000 and A3010

21 MB only £199

40 MB only £249

84 MB only £299

other capacities available, call for details

# 061 476 0576

Dealer enquiries welcome

Prices exclude VAT + delivery

OPEN 9-5.30 MON-FRI

There's a lot more to fonts than squiggles on paper. Whether for reasons of legibility, visual appeal or emotive impact, the shapes of letters contribute significantly to the messages they convey. Many newspaper readers in the UK, for example, can distinguish articles from *The Times*, *The Guardian* or *The Independent* by their typography alone (though they probably can't tell you how they did it) and fonts suitable for wedding invitations are obviously out of place in scientific journals.

Fads and fashions in typography come and go over centuries yet, still, people invent new shapes and uses for the same bunch of characters. Since the advent of computers, high-resolution printers and font editing software, typeface design has become available to a huge number of people not previously in possession of a lead foundry.

While this is a Good Thing, it has also produced some appalling typesetting. This is due, in part, to the fact that most 'enthusiastic amateurs' have not studied design and typography and perhaps lack an appreciation of the tools available. As one such enthusiast, I paid a visit to the Electric Font Foundry to find out what makes a good typeface. Here are some of the things I discovered...

## OF A TYPE

The words font and typeface are confusing. When type was lumps of lead arranged in a printing press, a font was a wooden tray containing all the letters with the same typeface, attribute, weight and point size. Today, with scalable fonts like those in Risc OS, size isn't important, so 'font' has come to mean all the letters of a particular design, weight and attribute; for example, Helvetica Bold Italic.

With all the accents, diphthongs and other special characters that can exist, a complete font often contains 300 to 400 characters. This is a problem for computers which, in general, can only handle an 'alphabet' of up to 221 characters at a time (256 Ascii codes less 32 control codes and DELETE). In the UK, the most

# TRUE TO TYPE

Richard Garrett hangs out at the Electronic Font Foundry and hammers out a few ideas about typography



ANDREW WHITELEY

## COMPARABLE FONTS

TRADITIONAL /PS	RISC OS	EFF	OTHERS
Courier	Corpus	EvenWriter	Messenger
Helvetica	Homerton	Swiss	Helv, Geneva, Neue Haas Grotesk
Times Roman	Trinity	EFF_Times	Times, TR, Claritas, Tymes Roman,
Benguiat		Ben	BG, Ventura, Matrix, Uranus
Copperplate Gothic		Formal	Spartan, Aquarius, Scotsman Royal
Gill Sans		Eric	Hammersmith, Glib, Graphic Gothic
Goudy		Frederic	Grecian, Number 11
Palatino		Michael	Palatine, Palacio, Michelangelo

# ANATOMY OF A FONT

## OUTLINES

Under Risc OS, font details are held in two files called *Intmetrics* and *Outlines*. The smaller *intmetrics* file lists the relative widths of every character in the font/alphabet. This is used to speed up text realignment when you make alterations. If you change the body style of a large DTP document, for example, the software doesn't redraw every character in the document before rearranging text on the current page. It just uses *intmetrics* data to calculate the necessary changes in line length on all the preceding pages.

The larger *Outlines* file, as its name suggests, contains outlines or 'skeletons' of every character in the font. An outline is rather like a *Draw* file, containing a base line and the Bezier curves that make the shape of a character. Risc OS outlines also contain lines called 'scaffolding'. These form global links that fix the height and width of characters and strokes throughout the font. In Risc OS 3.1, all these elements can be altered using the font editor.

Fonts are generated for screens and printers by scaling each outline to the required point size, superimposing it on a grid whose size matches the resolution of the device and then creating a second, bitmap image of the character. These bitmaps are stored as a 'lookup table' in the font cache and are then poked into screen memory or printer output as required.

## HINTING

The basic rule for making bitmaps from outlines is this: If more than 50 percent of a pixel falls within an outline, it is filled, otherwise it is left blank. This sounds good in theory but with coarse bitmaps (less than 1200dpi), the resultant shapes can vary enormously as shown in the diagrams on the right.

Consider a capital 'H' with vertical strokes 2.8 pixels wide. If the centre of the stroke falls on a cell boundary, with 1.4 pixels either side, then the two middle cells are filled but both 40% edge pixels are left blank creating a stroke two pixels wide. If, on the other hand, the edge of the stroke falls on the boundary, two full pixels and an 80% pixel are created, all three of which are filled. The results are an asymmetric font which may even have missing serifs.

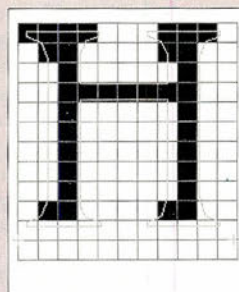
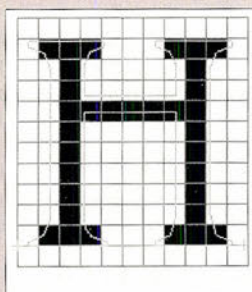
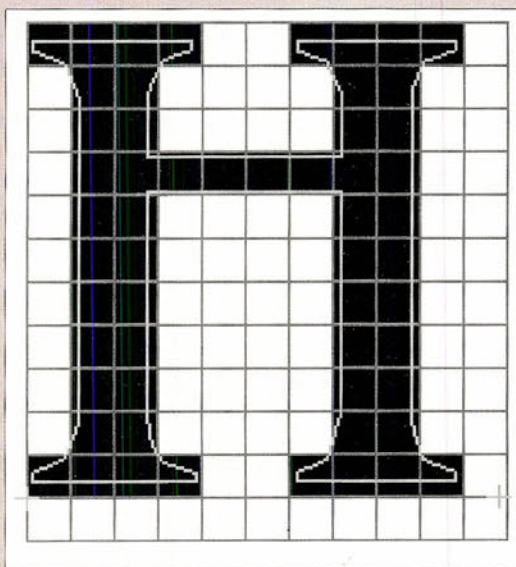
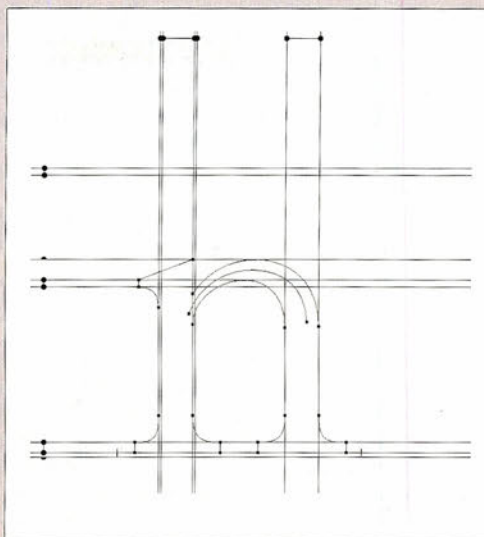
This effect can be corrected by the use of hinting. Well designed fonts contain additional code that standardises stroke heights and widths by fixing the alignment of characters to the pixel grid.

Hinting also eliminates the problem of disappearing curves in small characters. If a thin curve or slanted line crosses a grid at an angle, it is quite possible that it will pass through several cells without filling 50 percent of any of them. In this case the line will disappear altogether or, if some pixels are filled, will appear as an irregular bunch of dots. In Risc OS, font designers place 'skeleton lines' in the middle of curved outlines so when the bitmaps are drawn, these force the pixels they cross to turn black producing continuous strokes.

## ANTI-ALIASING

This is not a function of specific fonts but a part of Risc OS designed to reduce the familiar 'staircase' effect that occurs when computers draw non-orthogonal lines. When Risc OS creates bitmaps from font outlines, it actually does so at four times the resolution required by the current screen mode so that each pixel is treated as a 2x2 grid. The computer runs the '50 percent rule' on all the 'sub-pixels' in this finer array and then examines each block of four.

If all four cells are empty the pixel is left blank; if one cell is filled then the pixel is coloured light grey and so on, getting darker until four 'hits' give black. This produces an optical illusion where lighter edges seem to move towards the darker areas of each character to create smooth lines.



common alphabet is Latin 1 (ISO 8859/1) which can be used to write Danish, Dutch, English, Faroese, French, German, Icelandic, Irish, Italian, Norwegian, Portuguese, Spanish, Swedish and, in EFF fonts, Welsh. And as if that wasn't enough, ISO Latin 2, 3, 4 and 5 between them cover most other 'European' languages. Other alphabets include Cyrillic, Greek, Devanagiri and Punjabi languages as well as symbol sets like Braille, Chess, Maths, Music and Dingbats. When you buy a 'font', you normally buy the set of different weights and attributes that make up a whole 'typeface family' in a particular alphabet.

## WHO'S WHO

Some fonts are designed by the people selling them (for example EFF's SciFi) or, like Sasoon Infant, a font for infant schools, sold under licence to the original designer. Others have a longer history.

Many of today's typefaces have existed for hundreds of years and their designs are no longer copyright. Manufacturers selling them in digital versions, usually ITC or Adobe, have adopted the traditional names (Garamond, Times Roman, Baskerville and so on) as trademarks.

Although anyone can produce a font to a traditional design, it is illegal to sell it under an established name without paying the owner a sizable licensing fee. In this context 'producing' means drawing it yourself and not lifting it out of *Corel Draw* and then flogging it, unchanged, as your own work.

## FONT TO FONT

PostScript is a powerful and wonderful language, but its complexity is such that many people have problems using it. This often due to the variety of ways it handles fonts.

There are three methods of connecting Risc OS fonts to PS printers. The first is called 'mapping'. This is used when identical fonts exist in both Risc OS and the printer, but under different names (for example Trinity and Times Roman). Mapping speeds up printing by telling Risc OS to change the name of a font

## AUTOKERNING AND RISC OS 3

If you create a line of text from rectangular bitmaps by placing them edge to edge, the space between a letter pair like 'AV' will be much greater than the space in 'HI'. Kerning allows you to adjust these gaps to make the text look prettier, and the difference between kerned and non-kerned text can be seen below.

Kerning is available in Risc OS 2 but only manually. For instance, in *Impression*, the command CTRL-E enlarges letterspace and CTRL-R reduces it. One of the advantages of Risc OS 3 is that it has introduced a major font facility known as autokerning. Risc OS 3 font definitions can include a table of 'kerning values' for each letter and some difficult letter pairs. When programs print or display a font, they can read these values and space the characters automatically. This autokerning option in Risc OS 3 implies that programs could also implement something called 'track kerning', a subtle version of left/right justification that alters gaps between letter rather than spaces between words and eliminates 'rivers'.

EFF already produce fonts that allow autokerning, but at present very few people are using this facility. The reason is that, although auto-kerning is an integral part of OS 3.1, it has not yet been introduced into existing software. At the time of writing, the only packages that use auto-kerning are Clares' *Titler* and *Vector* by 4Mation. Computer Concepts says that the facility will appear in *Impression* version 2.5 which is expected in April or May. Finally, a tip to remember when you eventually get hold of auto-kerning is that the Risc OS font editor does not save kerning data when you edit and save a font. Just one more reason for backups!

TOTAL AVIATION  
 TOTAL AVIATION

## FONT WORDS

**ATTRIBUTES:** Variations that distinguish fonts within families. These include Condensed, Extended, Small Caps, Italic and Oblique (not the same thing at all). Designed correctly, these are different versions of the typeface as opposed to a regular font 'squashed' or 'twisted' by computer.

**BASE LINE:** An imaginary line that letters sit on. In fact very few letters actually sit on this line. This is particularly true of curved characters. Because circles of a given diameter appear smaller than squares of the same edge length, o's are drawn bigger than x's.

**BITMAP FONTS:** Fonts whose letters are small pictures made up of pixels; they distort when enlarged or reduced.

**BODY COPY:** The main part of a page of text, not headings or captions.

**BODY STYLE:** The style of the text in the body copy.

**CAP HEIGHT:** The height that capital letters extend up to from the base line. Some rounded ones or sharply pointed letters extend above this.

**CHARACTER:** A single letter.

**DISPLAY FACE:** Typeface designed for use in small amounts at quite large sizes.

**FIXED PITCH FONT:** A font in which every character takes up the same amount of horizontal space, like characters made by a typewriter, for example: *Corpus*

**FONT:** All the characters in a single typeface, for example *Times Italic*.

**FONTITIS:** An affliction suffered by inexperienced DTP operators. Symptoms include many different typefaces in lots of sizes and weights on the same page, everything set in upper case, and lots of shadows, auto-expanded, auto-condensed and other distorted text.

**HINTING:** Extra information coded into fonts which ensures the characters remain symmetrical and correctly shaped when displayed on screen or printed.

**LEADING:** Extra space added between lines of text.

**OUTLINE FONT:** Fonts in which letter shapes are described by Bezier curves and can be scaled to any size without any loss of shape or accuracy.

**PIXEL:** Picture Element. A single dot in a screen display or printout.

**POINT SIZE:** The size of the letters (in 1/72ths of an inch) used to set the text. In the days of metal type, the point size referred to the 'height' of the piece of metal that held the character. Today, there is no such piece of metal so point sizes can appear arbitrary and differ considerably from face to face. The typeface designer decides how much space there should be between lines of text if no extra space, or leading, is added. The overall height of the actual letters plus this minimum adds up to the point size.

**POSTSCRIPT:** A page description language developed by Adobe Systems Inc. for laser printers and typesetting machines. Your application turns the picture on screen into a program which is interpreted by a microprocessor in the printer. This draws the whole page in memory before printing it out. You can also write programs in PostScript.

**PROPORTIONAL SPACED FONT:** Font in which all the letters have different horizontal widths.

**RIVERS:** Wiggling vertical lines of white space that flow through computer justified body text when wide gaps between words join together over successive lines.

**SERIF:** Short terminating lines at the ends of letter strokes as in typefaces like *Times*. Typefaces without serifs (for example *Helvetica*) are called sans serif.

**TYPEFACE OR TYPEFACE FAMILY:** A group of fonts with the same name: *Times*, *Times Italic*, *Times Bold*, *Times Bold Italic*.

**WEIGHT:** The weight of a typeface is its overall appearance of light or black. A bold or heavy font appears darker because character strokes are thicker and less of the white page shows through. There is no absolute measure of boldness or lightness, one boldface type may actually be lighter than another in regular type. Weights include light, extra light, regular, demi bold, ultra bold and black.

before sending it to PostScript. Problems occur when the 'soft' font in question is absent from your printer.

The second method, which Risc OS calls 'download', involves sending fonts to the printer at 'start of day'. But, if you do this and fill the printer's Ram with all the fonts you'll ever need, large print jobs can overwrite these fonts in memory and crash the printer. The slowest but often the most reliable method is to download fonts as part of each print job. In this case, all the information you need for your final image is sent at run time. This is vital if you are sending PS files to print bureaux.

At various points in printing, PS also requires information stored in files called encoding vectors. This data varies between fonts, so it is important that the computer knows which encodings to send with which font, and where the files containing them are held within the printer driver.

Problems encountered with PS are frequently due to missing or overwritten fonts or encoding vectors. If you use EFF fonts, you can save a lot of time by buying the company's PostScript upgrade disc. This contains five 'run once' utilities that upgrade your PS driver to their entire range of fonts. They say it solves most common PS problems but, if you have OS 3.0, EFF strongly recommends that you upgrade to 3.1 as well.

## CONCLUSION

This is just the tip of an iceberg. Books on the technique and aesthetics of font design and typography might fill whole libraries. Suffice it to say, after my day at the Electric Font Foundry, I shall never look at a page of printing in quite the same way again.

## PRODUCT DETAILS

**Product:** EFF Fonts for Risc OS

**2, 3.1 and PostScript Type 1**

**Supplier:** The Electric Font

**Foundry, 50-52 Upper Village**

**Road, Ascot, Berks, SL5 7AQ**

**Tel: (0344) 28698**

**Price: from £7.50 to £160+VAT.**

**PostScript Upgrade disc; £7.50**

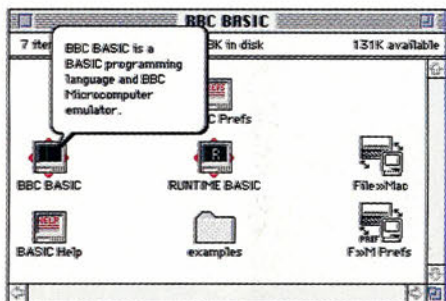
**+VAT**

# BBC BASIC Version 3

## Programming language and Emulator for the Apple™ Macintosh™

### Combines the power of the Macintosh ...

BBC BASIC 3 takes advantage of the advanced features of the Macintosh, and System 7, to provide an ideal environment in which to develop, test, and run your BASIC programs.

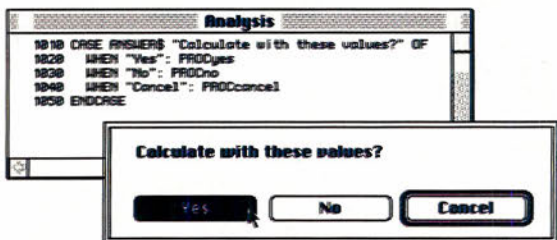


**Balloon help** provides instant information about the menus and dialogue-box options.

**Save Graphics option** saves the BBC BASIC graphics screen as a PICT file that can be loaded into other programs.

**Runtime BASIC** utility converts your BASIC programs into stand-alone double-clickable Macintosh applications.

**Macintosh-style interactive editor** provides a scrolling view of program listings with convenient cursor or mouse editing. You can work with any font available on your system and you can display keywords highlighted in bold for easy reference.



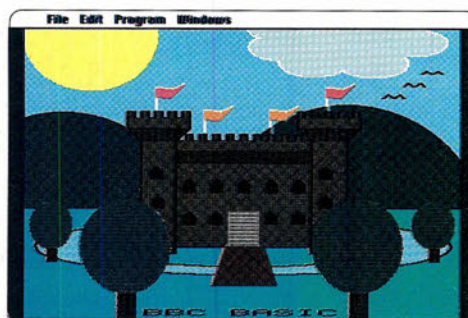
**Macintosh Toolbox interface** allows you to define your own menus, dialogue boxes, and scrolling lists using convenient BASIC keywords, and use the standard file dialogues for opening and saving data files.

**Dynamic tracing and debugging** lets you run or step through a program, highlighting each statement as it is executed, and you can display the values of any variables or expressions.

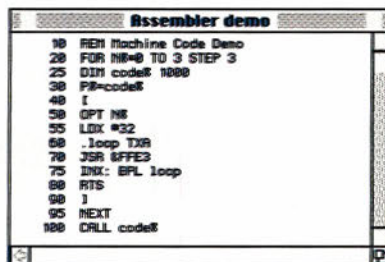
**Comprehensive help system** gives you instant information on keywords and operators, without interrupting what you are doing.

### ...with the best of the BBC Microcomputer:

BBC BASIC for the Macintosh gives you access to the foremost educational programming language in the UK, with the ability to run many programs originally developed for the BBC Microcomputer.



**Emulates BBC Microcomputer graphics and screen modes**, including Teletext. Work in full colour on an LC or Macintosh II, or grey shades on a monochrome Macintosh.



**Built-in assembler and 6502 machine-code interpreter** allows you to compile and run 6502 assembler programs, or machine code which you have loaded in directly.

**Full emulation of the BBC Microcomputer Operating System** including all the standard system calls and vectors, OSBYTE, OSWORD, \*FX calls, VDU codes, function keys, sound, and DFS/ADFS commands.

**Includes FileMac transfer utility** to transfer programs and data files to or from an Acorn Archimedes or BBC Microcomputer.

HUMAN▼COMPUTER  
INTERFACE · LIMITED

Human-Computer Interface Limited,  
FREEPOST, Cambridge, CB1 1BR  
(no stamp required if posted in UK)

Telephone: (0223) 314934. Fax: (0223) 462562

From Britain's largest Supplier  
of Educational Software

2 Guides to over  
2500 Educational Programs  
for BBC, Acorn RISC OS,  
IBM PC and RM Nimbus

All in Stock for Immediate Delivery  
For 5-11 Years  
For 11-Adult

For Your Free  
Copy Contact

AVP  
School Hill Centre  
Chepstow  
Gwent  
NP6 5PH

Tel 0291 625439  
Fax 0291 629671



AVP

A Comprehensive Guide to the Best Educational

SOFTWARE

Acorn · BBC · IBM PC · RM Nimbus



## Leading Edge

All products designed and  
developed by Vertical Twist  
Distribution exclusive to Greyhound Marketing.  
Dealer Enquiries 0532 621111

## Printer Port Sampler

This new package allows you to  
sample sounds into your Archimedes  
computer from a variety of different  
audio sources, including: Hi-Fi Midi  
Systems, televisions, radio or most  
electronic keyboards. The sampler  
plugs into the parallel printer port of  
your machine, and samples taken via  
a standard 3.5 mm jack socket rather  
than by an external microphone -  
thereby maximising sample quality.

The sampler is supplied with the  
powerful sample processing software  
PULSE, which allows you to manipu-

late the sounds that you have sampled  
and stored. Effects such as fade in, fade  
out, under sample, over sample can be  
applied, and the Input/Output Oscillo-  
scopes feature allows you to see the  
sample being played, in real time.

PULSE is able to save samples in three  
different files formats, Tracker, Armadeus  
and Acorn sound sample module, allowing  
you maximum flexibility.

PULSE offers the most sound sample  
options for the least money!

Available from 1st March 1993

Advance orders now available

£42.51

Dept AU43  
Northwood House  
North Street  
LEEDS  
LS7 2AA

0532 458800  
Fax 0532 423289



\* Please add £2.50 P&P and VAT @ 17.5% to the total  
\* Prices correct E & OE



£29.99

### The Games Wizard

- \* Find passwords for new levels!
- \* Add extra lives!
- \* Slow the game down by any amount!
- \* Add infinite shields!
- \* Save screen shots to preserve your high scores!
- \* Jump directly to higher levels or worlds!
- \* Perform all of these functions during game play!

— 66 —

Games Wizard is quite impressive in the success it  
achieves ... If you like cheating, get yourself a copy ..  
It does for the Arc what many hardware-based  
devices do for the Amiga but at a vastly reduced price

99 -

Acorn User Feb & March '93

With the National Curriculum's emphasis on Information Technology, the composition element in GCSE and the growth of Music Technology courses in both higher and further education, computers are rapidly becoming commonplace in music education.

For some traditionalist teachers, the music classroom may have seemed like the last bastion against 'left brain' digital monsters invading the school but now, however reluctantly, even music departments are coming to terms with the Arc.

This month, we advise one music teacher on her plans to explore the possibilities and challenges of music on the Archimedes...

### TEACHER'S TALE

Kate Thomas is a music teacher who wants to establish a new music setup in her school making use of the Archimedes. This is what she told us:

'I'm one of two full-time music teachers in a medium-sized comprehensive school. I had a conventional education in classical music. I started playing cello and piano when I was at school, did a university degree in music and then a teacher training course. I used computers to write up a few essays while I was at college but, apart from that, I've managed to avoid them.

'The school where I work has quite a few Archimedes and BBC computers, most of which are located in network rooms that staff book for classes and which the children can use on open access at lunch time and sometimes after school.

'Over the last couple of years, the school has put computer equipment into a number of other classrooms and, this year, I've been asked whether I want an Archimedes for the music department. I'm keen to take up the offer but I don't know what to ask for.

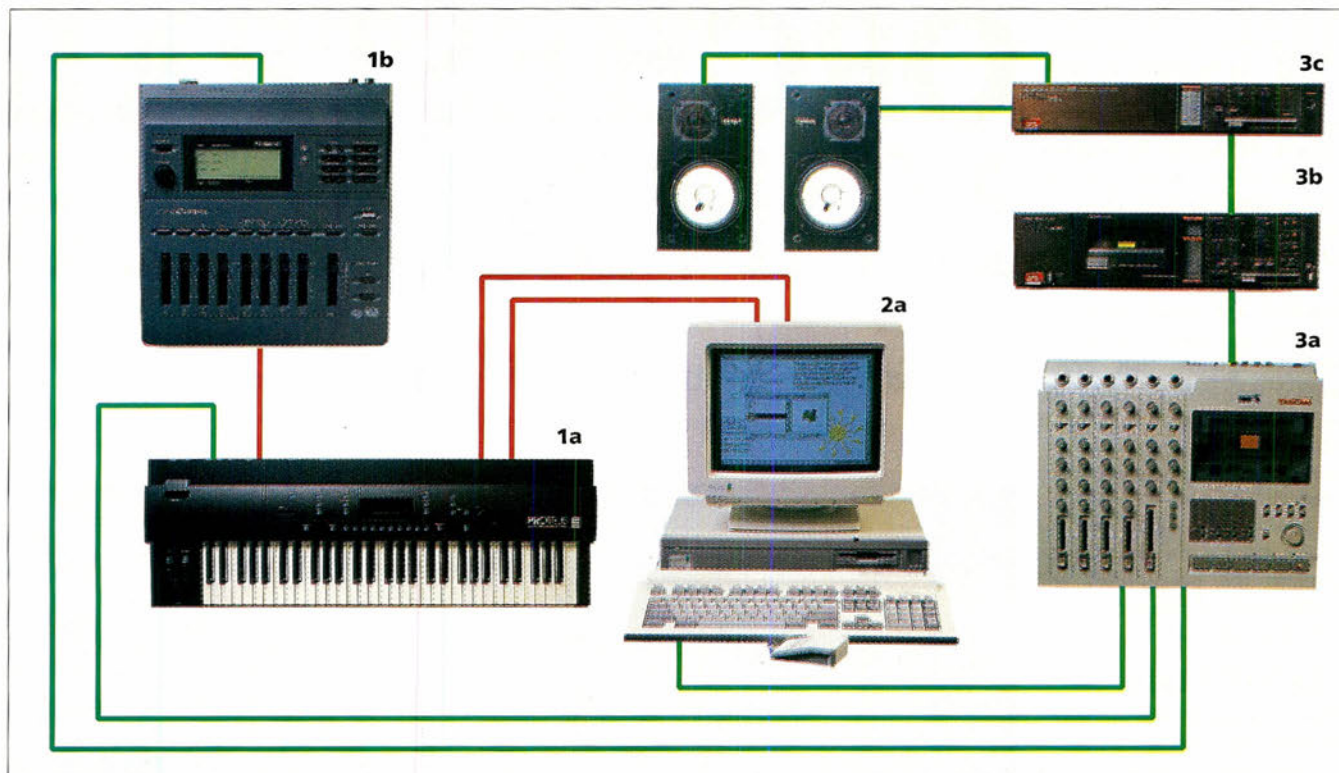
'What I do know is what I want it to do. I want to use the computer like a word processor to write out parts for the children to play and, if I can, to place musical examples within typed worksheets resorting to scissors and glue.

# ORCHESTRAL MANOEUVRES

Richard Garrett looks at music education on the Arc



Photo: ROBERT CLIFFORD / Stylists: POLLY GORDON & KATIE CLARK / Model: FIONA REED / Clothes: NEXT / Cello: BEAT AROUND THE BUSH



The diagram shown above shows how the various types of musical equipment can be linked up to Kate's machine. A keyboard (1a) plus a Roland SC-155 Sound Canvas (1b), and a Tascam 424 mixer (3a) are the musical components. The A5000 (2a) is fitted with a Midi card and uses Longman Logotron's *Notate*. A domestic hi-fi (3b, 3c) is what Kate will use to play the sounds. Musical equipment by Music Connections 071-731 5993.

COLOUR KEY: ———— Midi data ———— Audio signals

## PRODUCT DETAILS

The following hardware costs do not take into account any savings from educational discounts or from price reductions commonly offered by musical instrument dealers or, for that matter, the £400 you could save when an A4000 Midi podule appears. Dealers such as Music Connections can supply most musical hardware.

A5000 HD80: £1399 from Acorn (0223) 254254

Midi podule: £65 from Acorn

SC-155 Sound Canvas: £659

Headphones: £20 from any hi-fi store

Assorted Midi and audio cables: £20 from any electronic musical equipment dealer

Total hardware cost: £2,163

### OTHER POSSIBILITIES:

If you were building such a setup from scratch, you'd also need a Midi 'mother keyboard' and, optionally, a cassette multitrack tape recorder.

Here are some examples

Cheetah 550 'mother keyboard': £400

Tascam 424 portastudio: £479

Yamaha TG-100 GM module: £349

Zone GMX-1: £249

Boss Dr Rhythm 550 drum machine: £385

Em-u Proteus 2 sample player: £499

### MIDI SONGFILES

Words & Music 091-529 4788: classical, ragtime, drum patterns (Arc format)

Protracks Ltd. 081-763 2225: pop, jazz, standards (PC format)

Digital Music Archives 071-624 8774: classical (PC format)

Hands On (0705) 221162: pop, jazz, standards (PC format)

### SOFTWARE:

Notate: £59 from Longman Logotron (0223) 425558

Studio 24 plus: £212 from EMR (0702) 335747

MicroStudio: £67.23 from EMR (0702) 335747

Score Draw: £61.95 from Clares (0606) 48511

Rhapsody 2: £61.95 from Clares (0606) 48511

'If possible, I'd like the machine to help children analyse classical and popular scores. Most of all, they should be able to experiment with stave notation; to put notes into a computer and hear what they sound like. I think this would give them a more direct experience of written music than trying to follow my piano playing.

'I'd like to have enough electronic instruments so that

more able students could compose complex pieces of music on the computer but I'm a bit concerned about their monopolising it. From what I've seen of modern composers at work, writing on computer seems to involve one person using an awful lot of equipment for long periods of time.

'Is there any way that some composition and arrangement could be done on our open access computers before being

transferred to a more sophisticated setup?

'We already have some equipment in the form of two Yamaha DX7 keyboard synthesizers, some four-track cassette recorders and some amplification which, if possible, I'd like to incorporate into whatever system we put together. Education funding being what it is, I'd also like to invest in equipment that will not become obsolete too soon.'

## WE RECOMMEND . . .

What Kate needs is to have a spread of packages with which she and her pupils can experiment. For students who want to get into serious Midi composition, full blown sequencing package like EMR's Studio 24 plus would be useful, and for easier sequencing combined with keyboard practice, the EMR *MicroStudio* package could come in useful

as well. When it comes to analysis, one useful aspect of Midi is the Standard Midi File (SMF). SMFs are essentially musical scores stored in a digital format that you can load into any sequencer and play electronically.

Once the music is in the computer, you can alter its tempo without changing the tuning, edit it and change the relative volumes of different parts. If you silence a single 'track', you can play along in the style of the old 'music minus one' records.

Over recent years, a small industry has grown up in selling arrangements in this standardised digital format instead of as sheet music. Many suppliers concentrate on arrangements of the latest pop music, but a sizable minority are now flogging SMFs of anything from Beethoven to Be-Bop and beyond.

These days, most dealers supply 'songfiles' which are compatible with General Midi. To my knowledge, the only dealer to sell SMFs in Archimedes format is Words and Music, but a large number supply MS-Dos discs that can be loaded under Risc OS 3 or MultiFS.

As to easy composition software for Archimedes machines without Midi, I would suggest that the school purchase a multiple licence for Longman Logotron's *Notate*, a stave-based sequencer that uses the eight monophonic sound channels on the Arc. Students could experiment with melody, rhythm and harmony on 'unMidi'd' Archies with *Notate* and, having completed the initial stages, transfer their work to the Midi environment using SMFs.

They could then develop arrangements further in a more powerful sequencer, print out more sophisticated sheet music using a package like Clares' *Rhapsody* or *Score Draw*, or simply hear their work played on a more powerful system.

If the school were to buy several pairs of cheap headphones, a whole class could take over your network room and work on dozens of different tunes simultaneously. And you thought one loud 'Walkperson' on the tube was bad news...



## MUSICAL HARDWARE

I suggest that you invest in a hard disc Archimedes as the basis of a Midi workstation for your classroom. For ergonomic reasons, I'd go for a three-box model, so that the screen and processor box can be placed at eye-level above a synth keyboard with the computer keyboard and the mouse to one side. When a Midi podule is released for the A4000 this would also make a good choice. Hard disc systems are particularly useful for non-networked machines in schools because students can call up programs on their own without hassling you for the discs.

Having chosen your Arc and Midi podule, you need to invest in some more sound generation equipment. Yamaha DX7s were once regarded as the bees' knees in performance synthesizers, but they play only two 'voices' at a time and are limited as sound sources for composition. In their day (1983-86) they were considered quite expensive 'professional units' and so have good-quality keyboards that are quite comfortable to play; if don't mind plastic. This being this case, a Yamaha DX7 would make an admirable mother keyboard that you could use to input Midi data into the computer and drive a more sophisticated sound module.

For this module, which takes Midi instructions from the keyboard or the computer and turns them into sound, I strongly recommend that you purchase a Roland SC-155 Sound Canvas. This unit can play up to 24 notes simultaneously, and has 16-note multi-timbrality, that is, it can use up to 16 different 'voices' at a time. It has 315 built-in instrumental sounds including pianos, saxophones and gunshots as well as seven predefined drum kits.

I particularly like this box because it has 'slider' controls on the top which allow you to balance the volumes and stereo positions (pan) of all the different musical parts. This is a significant improvement on the baffling multi-function buttons and tiny LCD displays found on most modules.

My other reason for recommending the SC-155 is that it's a 'General Midi' (GM) device. GM is a development of the Midi specification which was added in 1991 to provide greater compatibility between sound generators. Among other things, it includes a standardised list of 128 numbered 'voice assignments'. This means that when you select voice number 78, for example, on a GM module, the sound that plays will always be that of a Shakuhachi flute – as on all those Peter Gabriel records – irrespective of which manufacturer built the box. Talk to any experienced user of Midi gear, and he or she will be only too glad to share their experience of flute sounds turning into air-raid sirens on the day they first plugged the new synth into their computer.

If, in the future you build further Midi workstations in your classroom, the sound modules you buy will undoubtedly be cheaper and have more sophisticated sounds but, as long as they are 'General Midi capable', a computer sequence written for the Sound Canvas will sound recognisably similar when played on the new system.

If you were going to use this gear exclusively for electronic music, you could buy a pair of headphones for the Sound Canvas and stop there, as far as hardware is concerned. Since this insular approach is the very thing you want to avoid, I suggest that you combine it with one of your four-track 'portastudios' and an amplifier. This would allow students to record computer compositions in collaboration with human instrumentalists.

## TECHNIQUES

The most useful package from Kate's point of view will probably be the Longman Logotron package, *Notate*, that I recommended for Kate's open access computers. This package can write and arrange tunes in up to eight-part harmony or in four parts with a chordal accompaniment.

It comes with a variety of sampled voices and has both Midi output and score printing options. When you open a new *Notate* window, what you see is a tape-recorder control panel and a five line treble stave which defaults to a 4/4 rhythm in C major at the ubiquitous tempo of 120 beats per minute. For this example, I'm going to use *Notate* to create a simple eight-bar melody.

Melody is defined as 'a group of single notes arranged in a recognisable pattern'. In other words, it's a technical term for 'a tune'. One could argue that any group of single notes could be called a melody and whether they are 'tuneful', is a matter for the ear of the beholder. Such aesthetic questions are, of course, beyond the scope of this article.

When writing a tune from scratch, you must start by considering a few of its basic characteristics. First, what notes are you going to use to make up the tune? Unless you're heavily into Schoenberg or contemporary jazz, it's unlikely that you'll feel comfortable writing tunes that use all of the 11 notes that are available on the stave, so it's a good start to limit the set of notes, or the 'scale' that your tune will use.

Let's stick with the seven notes that make up the key of C major. This is *Notate*'s default key signature and has no sharps or flats in it. Any tune played on the white notes on a piano will be in C Major.

Next, what rhythm is it going to follow? You could base it around a two-beat cycle (a march), three beats (a waltz) or four (just about every bit of pop music in the last 30 years). I chose the 'six-eight' time signature common among Irish jigs, nursery rhymes and other forms of 'diddly diddly' music. To set *Notate* to a particular time signature, you

open up the main menu, select 'Song', then 'Time Signature' and then change it using the arrows provided. At this point, I also slowed the tempo down to 100bpm by altering the metronome setting on the control panel.

Now it's time to get creative. Simple tunes generally have a lot of repetition in them, so a useful approach is to write a couple of bars that sound vaguely interesting and repeat them a few times with variations to create the melody. In *Notate*, you write tunes by selecting notes from the range of time-values on the control panel and dragging them on to the staff with the mouse. When you let go of the mouse, you hear the note.

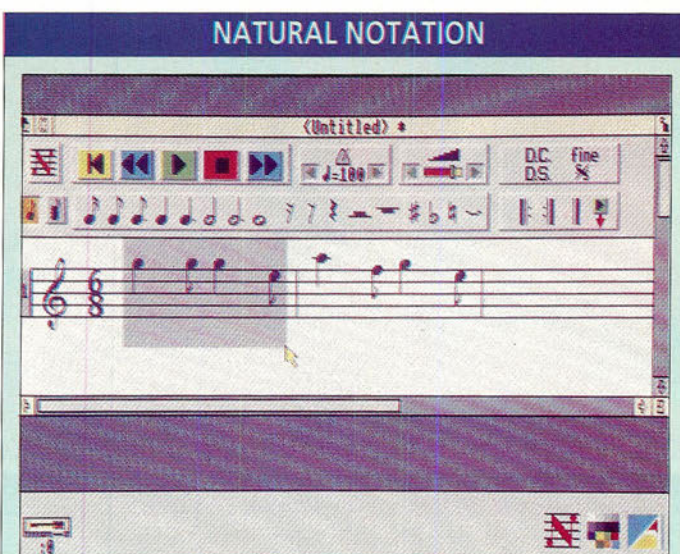
If the pitch is not what you want, you simply pick the note up again and drag it to another point on the staff. To discard a note, you drag it back to the control panel and release it there. Every so often during editing, you can hit the red play button on the control panel to hear how the whole tune is getting on. After faffing around, I came up with an innocuous two-bar twiddle.

Once you've created this first 'building block' for the tune, the next thing you could do is repeat some of it. You choose the notes you wish to duplicate by clicking on the Select button and dragging the mouse across them.

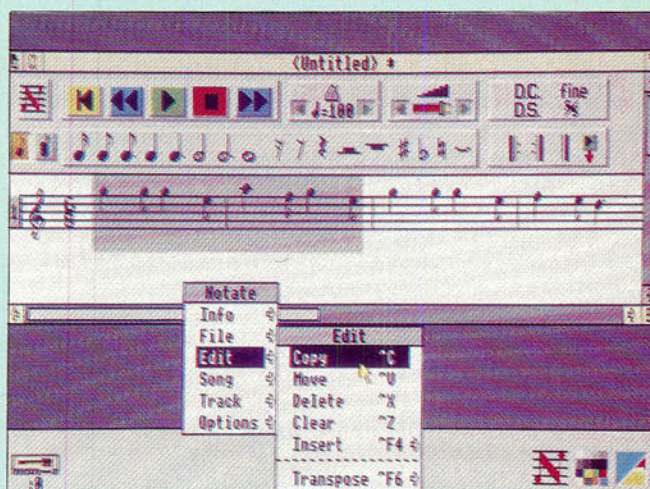
You then hit the copy option (CTRL-C), and the cursor changes into a small icon showing two notes. When you move this to another part of the staff and click on Select, the copied data is inserted at that point on the page.

In my case, I copied bar one into bar three and, after a little more time 'being creative', bar four made its appearance. At this point, it may help to see all four bars on the screen at once. This is achieved by calling up the 'small notes' option from the menu.

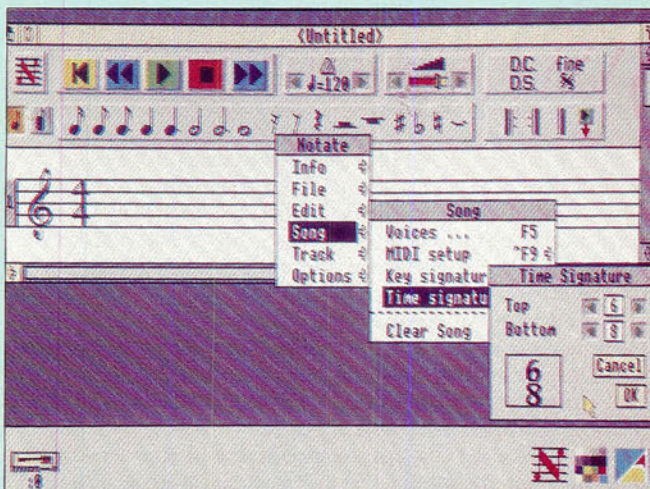
By now, my eight-bar masterpiece was half done; in fact, more than half, thanks to the magic of gratuitous repetition. My next step was to copy the whole of bars one and two into bars five and six and then to finish the whole thing off with a closing phrase I nicked from the theme to *Andy Pandey*.



Starting out in *Notate* is not a difficult matter. Notes can simply be selected from the control panel at the top of the screen and placed on the staff. The package offers instant feedback, and when the note is placed, it is immediately played.



To avoid re-inventing the wheel, it's useful to be able to cut and paste sections of music. *Notate* allows you to do this easily, and, if you wish, transpose the tune to another key. By clever and creative use of repetition, quite long pieces can be assembled easily.



Once a tune is finished, the next step is to play it in some form. *Notate* allows you to play out masterpieces with a variety of time signatures, and to set it up as a General Midi file. *Notate* is the package of choice for education because of its speed and ease of use.

Of course, this was only the beginning. Having created my basic melody, I called up the Create Track option from the Track sub-menu and wrote a bass line. This is easier than it sounds at first.

All you have to do is copy the top line into the second track, transpose it down a couple of octaves and then mess about with it. So, I'm not quite Stanley Clarke but there again, who is? This done, I added in a tambourine part and printed it out...



For reasons of printing, the illustration is a *Draw* file produced by passing the tune as an SMF to *Rhapsody* and *Score Draw*, but printouts are also obtainable straight from *Notate*.

## FUTURE DEVELOPMENT

If this installation is successful and when the funding allows, I suggest that the school repeat this process by buying another hard disc Arc and a GM module to complement the rest of their existing gear. With the current cross-platform interest in Midi as a sound control system for multimedia, music hardware costs are likely to keep going down for the foreseeable future.

Other Midi hardware to consider will depend on how the existing equipment gets used. If it gets leaped on by lots of teenage dance enthusiasts, then a drum module for the complex rhythms would take the pressure off the GM unit.

If, on the other hand, your users want a better experience of their own symphonic grandeur, you could consider an Em-u Proteus 2 sample player. The Proteus 2 is the 'orchestral' version of Em-u's range of sample players; it's not a General Midi machine, but it sounds lovely.

## STAY IN PLAY

Next month, we'll be looking at music for programs, *SoundTracker* players, and sampling.

## ARM3 upgrade with floating point accelerator option

The first ARM3 upgrade to allow a floating point accelerator chip to be connected directly to the ARM3's 32-bit coprocessor bus. The 25MHz ARM3 itself increases the speed of your computer by a factor of at least 3, and sometimes even more. In addition the floating point chip speeds up maths operations previously emulated by software.

Other floating point units have the disadvantage of occupying a slot in the backplane. They are also either incompatible with ARM3 boards, or relatively slow due to the 16-bit backplane interface. This upgrade does not suffer from any of these disadvantages.

- ★ **ARM3 alone gives typical 3 to 4 times speed increase**
- ★ **Floating point accelerator chip option for even faster maths functions**
- ★ **High quality 4-layer board**
- ★ **Fits A305, A310, A440, 400/1 series and the A3000**
- ★ **Fully compatible with other upgrades (memory, hard discs, RISC OS 3 etc)**

Installation is straightforward for all machines except the A3000, but a fitting service is available in all cases. Please note also that the A300 series and old A440 require the MEMC1a upgrade. Please write or phone for full details.

**Our usual money-back guarantee applies to this product.**

ARM3 introductory price - £175  
MEMC1a - £36 Floating point unit - £ TBA

**ARM3+RISC OS 3 - £199**

### A3000 memory

An easy to fit and reliable RAM upgrade. 8-chip design for minimal power consumption. **Gold plated** connectors ensure long term reliability. No soldering needed.

2Mb RAM board (upgradable to 4Mb) - £45  
4Mb RAM - £110  
Bare board (without RAM chips) - £25.50

### A3010/A3020/A4000 RAM

These machines may all be upgraded by easy to fit, plug-in components. No soldering is required.

A3020/A4000 extra 2Mb - £55  
A3010 extra 1Mb (2Mb total) - £29  
A3010 - £424. A3020 2MB FD - £749  
A4000 - £999

**All products fully guaranteed.** Many products also carry our 14-day money-back guarantee too. Please phone for details.

## ARM3+RISC OS 3.10 combined package for £199

### RISC OS 3.10

Acorn's new operating system for their range of RISC computers. The old version of RISC OS (2.00) is just 512K long, whereas OS 3.10 contains 2Mb of code.

Many applications which were previously supplied on disc are now contained in the OS ROMs. This includes improved versions of Draw, Paint and Edit. Because they are available on ROM they are always instantly accessible, and also occupy less RAM space.

Other features include extra "background" operations. For example, discs can now be formatted or files copied while the machine is used for other purposes.

RISC OS 3.10 may be used on the A305, A310, A440, 400/1 series, A3000, A540 etc.

Orders for RISC OS 3.10 are now being taken on a first-come first-served basis. Phone 0752 847286 for further details.

**RISC OS 3.10 £41.70**

### A305, A310 and A440 owners please note.

Although the ROM sockets inside your machine are large enough to accommodate the new ROMs, simply plugging in RISC OS 3.10 *will not work*. This problem is overcome by installing the RISC OS Carrier Board first. The RCB may be used with any version of RISC OS. This carrier board is compatible with memory boards, ARM3 upgrades and does not in any way obstruct expansion cards ("podules").

**RISC OS Carrier Board £20**

### A5000 systems & memory

A5000 with RISC OS 3, 40Mb hard disc, multisync monitor and ARM3. - £1399.  
A5000 learning curve. - £1445.  
Free 4Mb RAM upgrade included in the price.

2Mb memory board (4Mb total) - £85  
A compact board measuring just 104mm by 49mm, this design fits vertically in your machine. No soldering required. Unlike larger boards, there is no need to remove the disc drive. Four-layer design as specified by Acorn. A bare board (ie without the RAM chips fitted) is also available.

### Hard disc upgrades

A range of fast (17ms) SCSI hard discs with a two year warranty, in sizes from 52Mb upwards. Supplied with all metalwork and cables. 400/1 machines merely require the drive and SCSI card. 300 series require a backplane.

40Mb - £POA 85Mb - £220  
100Mb - £260 170Mb - £320  
Oak 16 bit SCSI card - £100

### Various

Aleph One 386 1Mb PC Card - £390 (4Mb £475)  
Aleph One 486 1Mb PC Card - £490 (4Mb £575)  
Impression 2 - £130

**Free price list available upon request.**  
Prices exclude VAT.

## A310 & A305 upgrade column

### Memory expansion

Extra memory is without doubt the most worthwhile addition to any A300 series machine. Some programs won't even run with only 1Mb, and 2Mb is a bare minimum. Certain applications, desktop publishing for example, benefit from a 4Mb system.

**2Mb - £89 4Mb - £145**

**Compatibility.** The memory is detected and used by the machine automatically, so there are no special commands needed. Works with both RISC OS 2 and 3.10.

The use of only eight RAM chips ensures low power consumption. Compatible with ARM3 upgrades, backplanes, hard discs etc. This upgrade is supplied on just one, compact board measuring only 195mm by 40mm. Four-layer circuitry reduces electrical noise for trouble-free operation. The 2Mb upgrade may be upgraded to 4Mb later by the user, without any soldering. A copy of the fitting instructions is available free of charge.

A complete fitting service is available for our RAM boards covering courier collection, installation and testing, MEMC1a, return delivery and guarantee. This is normally a three-day service (eg, collected Monday, returned Wednesday). We have been upgrading 300 series computers for over three years, and during that time a reliability record second-to-none has been established.

Is there any other 300 series RAM upgrade which has been available for as long as this one, and which has the same reputation for quality and reliability? No.

*Still not sure? Compare it with the competition before making up your mind. Use our 14-day money-back guarantee to check it out for yourself.*

**RISC OS Carrier Board £20**

This is an easy to install adaptor board for the larger RISC OS 3 ROMs. A set of links on the board allows it to be used with RISC OS 2 and easily adapted for RISC OS 3 later. Suitable for use with the A305, A310 and A440. The adaptor has been fully tested with RISC OS version 2.00 and version 3.10. It is fully compatible with other hardware upgrades such as the RAM board described above, ARM3's, backplanes, VIDC enhancers and expansion cards.

**4-slot backplane with fan £57**

### Combination deals

4Mb with MEMC1a, self-fit **£181**

Collection of your computer, installation of 4Mb of RAM, MEMC1a, and RISC OS Carrier Board, testing, full guarantee, and return delivery **£199**

Special prices available on hard discs, ARM3 boards and software when ordered with any memory upgrade. (RISC OS 3.10+ARM3 for only £199)

### DTP special

**Your A300 upgraded with 4 Meg of RAM, MEMC1a, ARM3, RISC OS 3 and Impression 2 software £485**

We can supply a range of hard drives with the above system.

### RAM for 410 & 420

Upgrade from 1Mb to 2Mb - £34  
Upgrade from 2Mb to 4Mb - £65  
Upgrade from 1Mb to 4Mb - £99  
Supplied with full instructions.



**IFEL Ltd**

**Educational and quantity discount available.**

34 Culver Road, Saltash, Cornwall PL12 4DR. Tel (0752) 847286. Fax (0752) 840029

## Authorised Education Dealers

47 Winchester Road, Four Marks, Alton, GU34 5HG, Hampshire



0420-561111

# Alsystems



All prices exclude VAT  
These prices cannot be guaranteed due to currency fluctuations

### A5000/400/300 SCSI Hard Discs

16 Bit	Cumana SCSI Interface	£139.00
16 Bit	Morley SCSI Cached Interface	£179.00
85Mb	Conner SCSI Hard Drive	£198.00
121Mb	Conner SCSI Hard Drive	£235.00
170Mb	Conner SCSI Hard Drive	£266.00
212Mb	Conner SCSI Hard Drive	£345.00
540Mb	Conner SCSI Hard Drive	£660.00
765Mb	Micropolis SCSI Hard Drive	£790.00
1050Mb	DEC SCSI Hard Drive	£999.00
2000Mb	DEC SCSI Hard Drive	£1799.00
3500Mb	DEC SCSI Hard Drive	£2999.00

### A5000/400/300 IDE Hard Discs

40Mb	Conner IDE Hard Drive	£99.00
85Mb	Conner IDE Hard Drive	£179.00
121Mb	Conner IDE Hard Drive	£210.00
212Mb	Conner IDE Hard Drive	£325.00
251Mb	Conner IDE Hard Drive	£353.00
360Mb	Conner IDE Hard Drive	£599.00
540Mb	Conner IDE Hard Drive	£695.00
1050Mb	Micropolis IDE Hard Drive	£1176.00

### Hard/CDROM/Cartridge Drives and Miscellaneous

Syquest 44Mb External SCSI Cartridge Drive	£390.00
Syquest 88Mb External SCSI Cartridge Drive	£475.00
Cumana External SCSI CDROM Drive	£389.00
Special Cumana CDROM Pack (Including Interface)	£547.00
Morley External SCSI CDROM Drive (Including Interface)	£489.00
A3000 Series HCCS 30Mb IDE HD + User Port	£199.00
A3000 Series ICS 60Mb IDE Hard Card	£274.00
A3000 Series ICS 80Mb IDE Hard Card	£324.00
A3000 Series ICS 120Mb IDE Hard Card	£424.00
A3020/A4 Conner 60Mb Internal IDE Hard Drive	£225.00
A3020/A4 Conner 85Mb Internal IDE Hard Drive	£235.00
A3020/A4 Conner 120Mb Internal IDE Hard Drive	£317.00
Aleph One PC 386 Card with 1Mb RAM	£375.00
Aleph One PC 486 Card with 4Mb RAM	£569.00
A5000 Second Drive Fitting Kit	£19.95
External Hard Drive Casing for SCSI Drives	£65.00
IDE Interface for A3000/400 series	£65.00
A5000 4Mb RAM Upgrade	£85.00
A3010 2Mb RAM Upgrade	£50.00
A3020/4000 4Mb RAM Upgrade	£75.00

We Specialise in the following:

Storage Media:  
Hard Drives  
CDROM Drives  
Optical Drives  
Cartridge Drives  
Tape Streamers  
DAT Streamers

RAM Upgrades:  
A5000 Series  
A4000 Series  
A3000 Series  
A300/400 Series  
A500 Series

PC Cards:  
PC386 - 1Mb  
PC386 - 4Mb  
PC486 - 1Mb  
PC486 - 4Mb



UNIX - Network Specialists - Repairs and Maintenance

## Gnome Computers Limited

25A Huntingdon Street, St. Neots, Cambs, PE19 1BG  
Tel./Fax: 0480 406164 E-Mail: support@gnome.co.uk

## X Window System R11.4

This software package, developed in association with Acorn Computers, converts a RISC OS based Archimedes into an X Terminal. The software will allow communication with X clients over Ethernet or Econet.

X Software	£199
Complete Colour X Terminals from	£1150

### Archimedes upgrades

A440/R140 4-8MB Memory Upgrade	£550
External SCSI 200MB H/D + Acorn SCSI Card	£990
External SCSI 1.2GB H/D + Acorn SCSI Card	£1999
External 150MByte SCSI Tape Drive	£850
External 8GByte SCSI DAT Tape Drive	£1800

### Transputer & i860 Systems

Gnome Computers offers a complete range of transputer and i860 boards to fit into either RISC OS or RISC iX based Archimedes machines. Prices start at £1385 for a single 10 MIP, 2 MFLOP transputer system including a parallel FORTRAN-77, C, Pascal, Modula-2 or Occam compiler.

## UNIX & Network Specialists

## SENLAC Computing Limited

### Art/Graphics

Artworks	145.00
Chameleon 2	42.00
GraphBox Pro	115.00
Illusionist	85.00
Imagery	82.25
Revelation 2	128.75
smArt	54.00
smArt Filer	38.00
Vector	89.00

Books	
First Impressions	31.00
Good Impressions	29.00

Communications	
ArcComm 2	55.00
ArcTerm 7	70.00

Databases	
Flexifile	133.00
Squirrel	150.00

Bargain Box!	
Saloon Cars	15.00
3D Construction Kit	125.00
Fax Pack	282.00
ITracer	30.00
EasiWriter	120.00
Mid. Graphics Clips 1	25.00
ScanLight 256 (Arc)	190.00

### Limited Stock!

DTP/WWP	
Impression 2	145.00
Impression Junior	81.00
Pendown Outline Fonts	19.95

Education	
Fun School 4 (0-5)	21.00
Fun School 4 (5-7)	21.00
Fun School 4 (7+)	21.00

Hypermedia	
Genesis 2	130.00
Maggie	56.00

Music	
Notate	59.00
Rhapsody 2	55.00

Utilities	
Articulate	19.00
Compression	48.00
Investigator 2.2	25.00
Speech!	16.50

Peripherals	
Vision B+W Digitiser	56.00
* Colour Dig. (internal)	89.50
ScanLight 256	220.00
ScanLight Professional	640.00
with SCSI interface	790.00

Don't pay until you receive your order! Cash-on-Delivery is available on orders up to £350 for only £3.50 extra.

VAT Reg. No. 508 7594 16

Score Draw	55.00
VoxBox	55.00
MIDI/Sampler (Econet)	75.00

Peripherals	
Vision B+W Digitiser	56.00
* Colour Dig. (internal)	89.50
ScanLight 256	220.00
ScanLight Professional	640.00
with SCSI interface	790.00

Don't pay until you receive your order! Cash-on-Delivery is available on orders up to £350 for only £3.50 extra.

### Printers

Canon BJ-10ex	205.00
with CC Turbo Driver	255.00
Epson LQ570	290.00
LaserDirect HiRes 4	1050.00
Panasonic KX-P1124i	230.00
Swift-24e colour+driver	305.00

Spreadsheets	
Eureka!	128.75
Pipedream 4	199.00

Consumables	
10 x 3 1/2" TDK DS/DD	8.90
10 x 3 1/2" TDK DS/HD	12.50

Games	
2067BC	18.50
Aggressor	17.80
Aldebaran	28.95
Black Angel	29.95
Bobby Blockhead	17.50

All prices include VAT, post & packing

Break 147 & Superpool	29.95
Cartoon Line, Part 1	19.50
Chopper Force	24.95
Chuck Rock	21.75
Cyber Chess	43.00
Cyborg	22.50
E-Type Compendium	20.75
EGO: Repton 4	21.25
Fervour	21.75
Galactic Dan	21.50
Gods	21.75
Gribbly's Day Out	21.95
Grievous Bodily 'Arm	20.75
Guile	25.20
James Pond	21.75
Krisalis Collection	25.25
Lemmings	21.75
Oh No! More Lemmings	16.95
Legend! Lost Temple	19.50
Lotus Turbo Ch. 2	21.75
Magnetic Scrolls Colln	28.95
Man. Utd. Europe	21.75
Master Break	16.50
Nebulus	21.75
Pesky Muskrats	21.95
Provocator	16.95
Quest for Gold	21.75
Saloon Cars Deluxe	29.95
Spheres of Chaos	21.25
SWIV	21.75
Top Banana	21.25
X-Fire	20.75

Cheques/postal orders should be made payable to SENLAC Computing Ltd. (AU0493)

P.O. Box 304

BRIGHTON, BN2 2TT

Don't forget to tell us which machine you have! Please send a S.A.E for our current price list.

Company Registration No. 2277309

If ever there were a universal utility, I suppose it would have to be the text editor. For many, *Edit* caters for all eventualities, but there are a couple of products on the market that might tempt you to buy a new version of this most fundamental of programs.

Some time ago I reviewed *DeskEdit* from Risc Developments. Its sequel, *DeskEdit 2*, has now appeared, offering, it seems, even more reasons to upgrade from dear old *Edit*.

However, making the picture more complicated, 4Mation has produced *DBEdit* – a desktop Basic editor. Add to the scene the latest version of *Edit* (1.44) which comes in your new Risc OS 3.1 Rom and the editor market has never seen such action before.

Which editor you choose very much depends on what sort of files you edit the most. This round-up is intended to highlight the strongest features of each, so you can make up your own mind.

*DBEdit* is designed largely for editing Basic programs in the desktop although it can handle text, obey files and so on. Initially, the Acorn Basic editor *ARMBE* (that used to come free with the machine) was probably the most popular choice with Basic programmers.

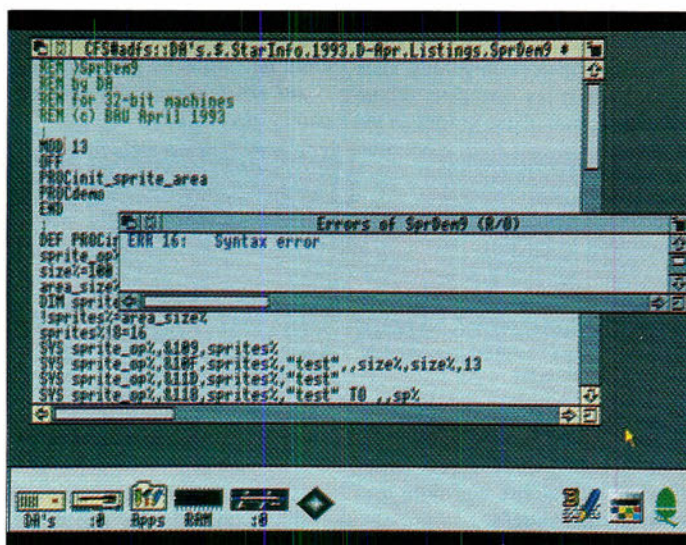
*DBEdit* is a natural progression from *ARMBE* in many ways, not least because it is a line-based editor. For example, there is a keypress to join the current line with the next, inserting a colon as necessary, and blocks are selected for copying, deleting and so on, on a line basis; most logical for Basic programming.

If you're used to *ARMBE* then *DBEdit* will probably seem quite natural to use. Some keys are the same (CTRL-C to copy) but others mimic different applications (CTRL-X to delete).

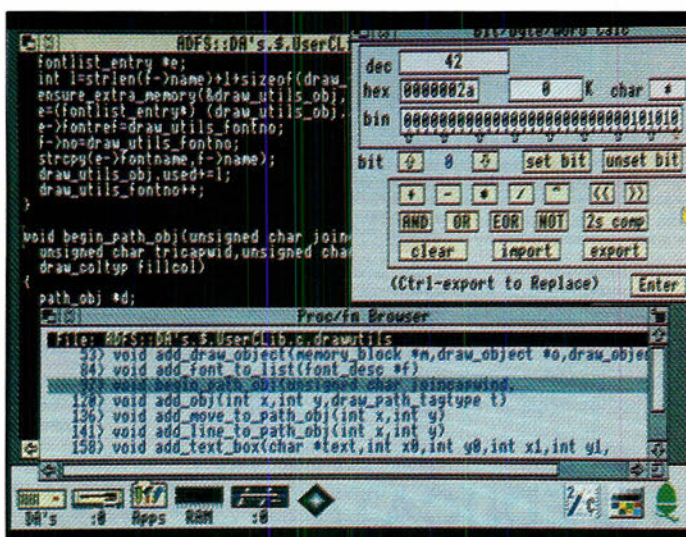
*DeskEdit 2* aims to be more general-purpose, although the latest version has many new facilities, including renumbering. Searching has come a long way. *Edit 1.44* and *DeskEdit 2* both feature 'power searching', enabling fairly elaborate searches and replaces. *DeskEdit 2* also has a 'quick search' when you don't require all the full-blown features.

# CODERS' CHOICE

Dave Acton examines two products that may tempt you away from Edit



DBEdit is useful for editing Basic programs on the desktop



DeskEdit 2 includes a scientific calculator

*DBEdit* includes a one-key search facility so you can jump to one of four user-definable strings with one keypress.

Browsing and indexing are *DeskEdit 2's* and *DBEdit's*

respective names for similar and very useful enhancements to searching. The idea in each case is to look through a file for one or more keywords, building a list in a new win-

dow of all occurrences. Then, clicking on any entry in the browse or index window takes you to the appropriate place in the file. It's particularly useful to have an index of DEF PROCs and *DBEdit* permits preceding or following REMs to be listed as part of the index.

On-line help also features heavily in the two new editors. *DBEdit* offers a comprehensive help file which can easily be indexed using the Index option. *DeskEdit 2* goes one further with a keyword help window; enter the Basic keyword and the appropriate help text is retrieved from a file.

Throwback is the new catchword for programming in the desktop and both *DBEdit* and *DeskEdit 2* offer 'error throwback'. In the case of *DeskEdit*, this links in with the Acorn Ansi C compiler and linker; any compilation errors are fed back to the editor, so you are taken to the exact trouble spot.

*DBEdit* offers the same facility for Basic programmers, and this may be a key feature when it comes to prising the die-hard command-line fetishists into the desktop world. When editing a Basic program, you can simply press CTRL-R to run it. If an error occurs, this appears in a throwback window and you can address the problem quickly.

Which you buy depends on what you do. For many, just upgrading to Risc OS 3.1 will provide a multi-feature editor suitable for boot files, Basic, C and assembler programs alike. *DeskEdit 2* is now a very sophisticated editing package, though, and well worth the money. *DBEdit* is a well-written alternative for Basic addicts and certainly makes desktop Basic programming a good deal easier.

## PRODUCT DETAILS

**Product:** DeskEdit 2  
**Supplier:** Risc Developments,  
 117 Hatfield Road, St Albans,  
 Herts AL1 4JS  
**Tel:** (0727) 840303  
**Price:** £27.19+VAT

**Product:** DBEdit  
**Supplier:** 4Mation, 14 Castle  
 Park Road, Barnstaple, Devon  
 EX32 8PA  
**Tel:** (0271) 25353  
**Price:** £30+VAT

# The Top Selling 10 out of 10 Series

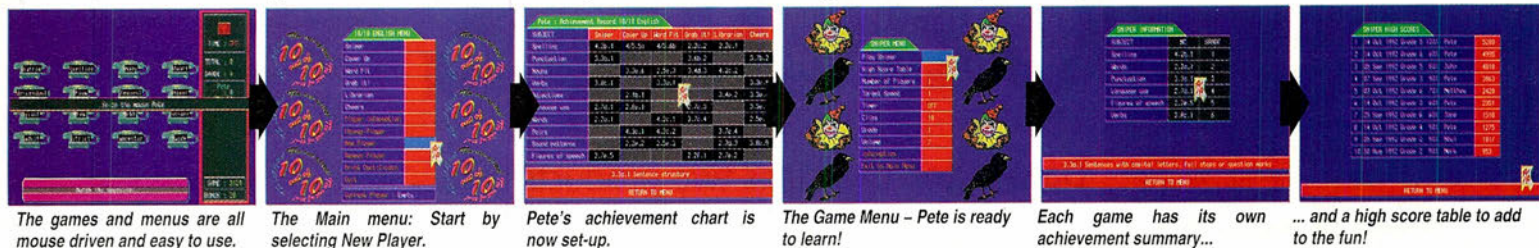
## EDUCATIONAL SOFTWARE SYSTEMS THAT REALLY WORK!

### GUARANTEED to help educate children from 3 to 16 years of age



## HOW THE SYSTEM WORKS...

A brief demonstration of the 10 out of 10 English package in action.



The games and menus are all mouse driven and easy to use.

The Main menu: Start by selecting New Player.

Pete's achievement chart is now set-up.

The Game Menu - Pete is ready to learn!

Each game has its own achievement summary...

... and a high score table to add to the fun!

**THE 10 out of 10 SERIES** is an innovative collection of educational software. It covers traditionally accepted educational concepts and automatically records progress in a wide range of areas - all linked to the National Curriculum.

Children learn - and are assessed - by playing cleverly devised games, each with SIX grades allowing the child to progress at his or her own rate. Where appropriate, the achievement tables show the correlation of the grades to the

National Curriculum statements. You start by entering your child's name. This automatically creates his or her blank achievement chart - the program can hold up to 64 of these (ideal for the average class or a large family).

Moving the mouse pointer around a chart you can discover exactly what a child will learn by playing a particular game at any grade. The achievement charts are automatically updated to record progress as the the six compulsive games are played.



Sniper: Rearrange the words - with correct punctuation.

Cover Up: Match all the words with their opposites.

Word Fit: Fill the grid - but only use verbs!

Grab It!: There are plenty of collective nouns up for grabs!

Librarian: Sort the books, then match the adjectives.

Cheers: Discover the meaning of sayings.

**THE SIX CHALLENGING GAMES** in each 10 out of 10 package are designed to be played by a child alone, with friends or with you. Each game has six grades to cover a wide age range and include practise levels where appropriate - you can easily set many options to suit ability and taste too! You can even leave the child and return later to check progress.

Children work their way through the six grades of each game trying to turn the achievement chart green as they go. As an illustration, the screen shots

below show a middle grade of each of the six games in the English package - suitable for children at Key Stage 2 of the National Curriculum (age about 8 to 11 years).

Remember, all the games have five other levels and many features - such as graphics and speed - can be easily customised by parents or teachers. This flexibility makes 10 out of 10 English suitable for all ages and abilities from age six to sixteen.



Children can print a certificate of achievement...

... and they love to see their name on the high score table!

By pressing R you can see the aim of the game at a glance.

Each game has its own achievement summary.

**MOTIVATION & ASSESSMENT** are provided in two ways: an achievement chart displays academic results and high scores show gameplay. The former records progress as the games are played:

**RED** means help needed. **YELLOW** means practise needed. **GREEN** means 10 out of 10!

Now you can see where your child is not succeeding and use the various options to customise the games to help him or her progress more quickly. Children achieving 10 out of 10 in one or more grades can print a certificate - both on-screen and printed certificates are catered for. Children using the Early Essentials package are awarded stars too!

Pete: Achievement Record 10/10 English						
SUBJECT	Sniper	Cover Up	Word Fit	Grab It!	Librarian	Cheers
Spelling	4.2b.1	4/5.5a	4/5.6b	2.7c.2	2.2c.1	
Punctuation	3.3a.1			3.6b.2		3.7b.2
Nouns		3.3e.6	2.5e.3	3.4d.3	4.2c.2	
Verbs	3.8c.1		3.3a.1			3.3e.1
Adjectives		2.1b.1			3.4e.2	3.3e.2
Language use	2.7d.1	2.8e.1		2.7c.3		3.5e.1
Words	2.2a.1		4.2c.1	3.7c.4		2.5e.1
Proverbs		4.3a.1	4.3c.2		3.7c.4	
Sound patterns		2.2e.2	2.5e.3		2.3d.3	3.8c.9
Figures of speech	2.7e.5			2.2f.1	2.7e.2	
3.3e.8 Simple use of past tense						
RETURN TO MENU						

The achievement chart shows progress. By moving the pointer you can view a layman's interpretation of Curriculum numbers.

## GUARANTEED TO EDUCATE

... or you don't have to pay!

Our **FREE 14 DAY TRIAL** is exactly what it claims to be! We don't bank any payment until you've had chance to test the software for yourself.

**YOU CAN TRY IT FREE - THERE IS NO CATCH!**

**TELEPHONE 0742 780370 NOW!**

## HOW TO ORDER ...

Each package is **ONLY £25.95** and you can order by **CREDIT CARD, CHEQUE** or **EDUCATION AUTHORITY ORDER**. We will send you the software by **First Class Post** without processing the payment. If you do not wish to keep the package simply return it to us within 14 days and we will return your **ORIGINAL** cheque or order or not process your credit card for payment. You need not even say why you are returning the package!

**NO QUESTIONS, NO QUIBBLES, NO HASSLE**

Order by Post or Phone from:

**10 out of 10 Educational Systems**

**1 Percy Street, Sheffield, S3 8AU**

**0742 780370**

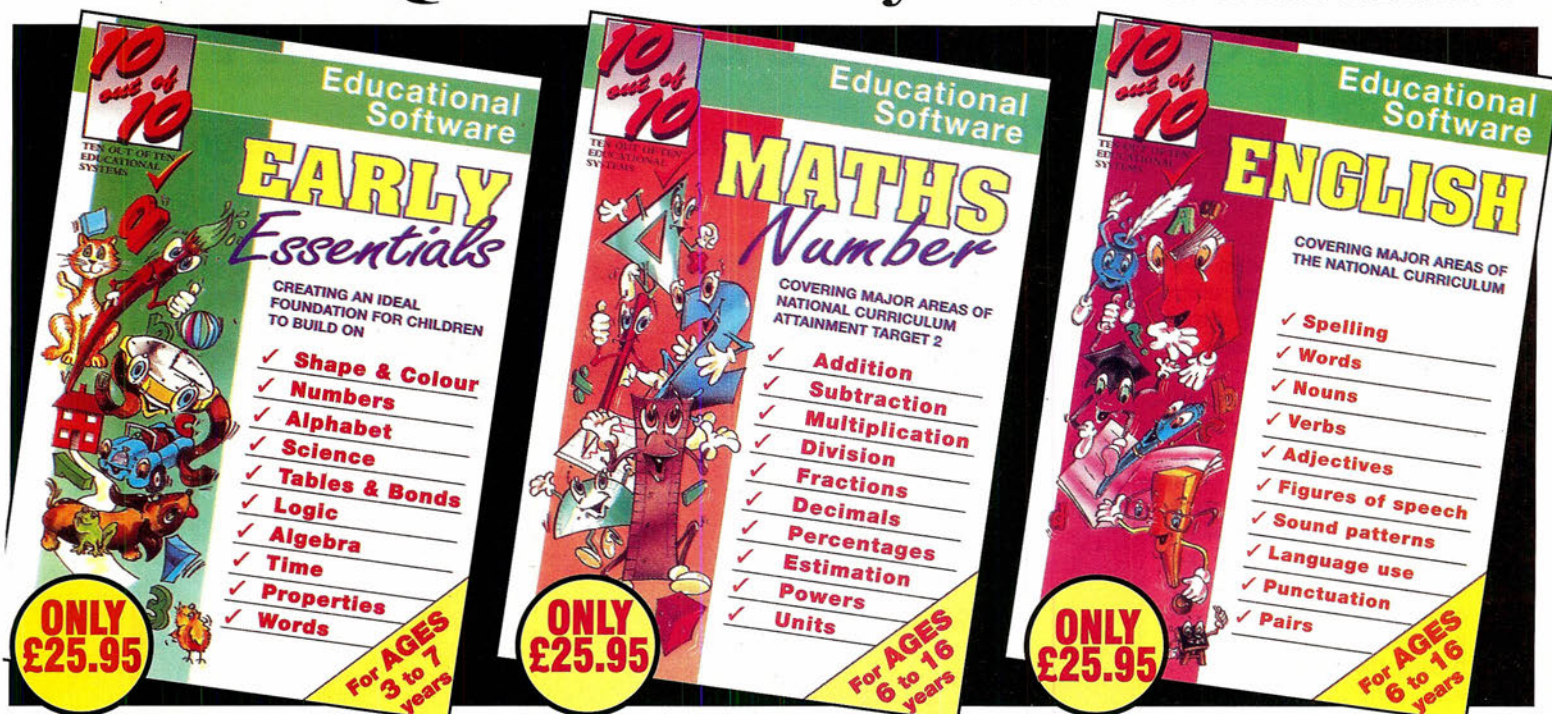


Site and Network Licences are available - please ring for details



# 14-Day FREE Trial

No Quibble Money-Back Guarantee



## Early Essentials For Children Under 7 Years

### Subject Areas Covered

Gnasher	Grab It
G1 Recognise simple shapes and colours	Shape/Col G1 Check shape and colour knowledge
G2 Learn the order of the numbers 1 to 10	Numbers G2 Reading simple alpha-numeric look-up tables
G3 Learn the alphabet - with pictorial clues	Alphabet G3 Improving reading/vocabulary
G4 Simple sequences including odd and even numbers	Logic G4 Recognising characteristics (size + shape + colour)
G5 Discover properties of common objects	Science G5 Reading and understanding two-way tables
G6 Experiment with numbers and operations	Table/Bar G6 Identifying scientific diagrams
Link Up	Stones
G1 Match and link shapes and colours	Shape/Col G1 Understanding number conservation
G2 Learn to count up to ten	Numbers G2 Stepping through the alphabet
G3 Recognise the link between upper and lower case	Alphabet G3 Patterns of growing and shrinking shapes
G4 Link two shapes to composite pattern	Logic G4 Learning to tell the time
G5 Match analogue to digital clocks	Time G5 Practising number skills
G6 Know a selection of simple words	Words G6 Using common sense to follow a sequence
Artist	Racer
G1 Colour and coordination skills	Shape/Col G1 Understand the meaning of push and pull
G2 Counting with coloured rods	Numbers G2 Following letters in alphabetical order
G3 Number stories with coloured rods	Table/Bar G3 Associating words and pictures
G4 Following rules to recognise attributes	Properties G4 Elementary algebra - "find a number" problems
G5 Pattern and symmetry through shape and colour	Algebra G5 Knowledge of everyday items
G6 Beginning a basic science vocabulary	Science G6 Accurate and rapid time recognition

## Maths (Number) For Children 6 to 16 Years

### Levels of Attainment Target 2 Covered

Carnival	Grab It!
G1 2a.1 Know and use addition facts up to 10	Addition G1 3a.1 Use decimal notation with money
G2 3c.2 Understand remainders in a calculation	Division G2 3b.2 Know and use the 2, 5 and 10 times tables
G3 4a.2 Multiplication facts up to 10 x 10	Mult. G3 4a.5 Mental subtraction of 2 two-digit numbers
G4 5b.2 Calculate percentages of quantities	Percents. G4 4a.6 Mental addition of several single-digit numbers
G5 6a.5 Relate equivalent fractions to decimals	Decimals G5 6b.1 Estimate multiplication and division
G6 8c.1 Use of estimation to check size of answers	Estimate. G6 7a.2 Division of multiples of powers of 10
Cover Up	Silicon Brain
G1 3a.4 Know and use subtraction facts up to 20	Subtract. G1 2b.2 Find the difference between numbers
G2 3b.1 Multiplication facts up to 5 x 5	Mult. G2 3c.3 Use a wider range of metric units
G3 4a.4 Mental addition of 2 two-digit numbers	Addition G3 5b.1 Calculate fractions of quantities
G4 4a.10 Division of two-digit nos. by single digits	Division G4 4d.4 Multiplication and division problems
G5 6a.4 Using equivalence of fractions (and ratios)	Fractions G5 7b.3 Use memory and brackets on calculator
G6 6a.10 Convert fractions to percentages	Percents. G6 8a.1 Standard form (integral powers of 10)
The Big Bang	Cheers
G1 2a.2 Know and use subtraction facts up to 10	Subtract. G1 2b.1 Whole number add and subtract problems
G2 3a.3 Know and use addition facts up to 20	Addition G2 3c.2 Make estimates based on familiar units
G3 5a.3 Multiplication of single-digit powers of 10	Mult. G3 4a.14 Solve multiplication and division problems
G4 5a.4 Mental division of single-digit powers of 10	Division G4 5d.1 Imperial units in daily use
G5 6a.8 Percentage changes	Percents. G5 5d.4 Use index notation
G6 8a.9 Convert fractions to decimals	Decimals G6 8b.2 Four rules of fractions

## English

### For Children 6 to 16 Years

### Attainment Targets and Levels Covered

Sniper	Grab It
G1: 4.2b.1 Simple monosyllabic words	Spelling G1: 2.2b.1 Read a range of simple material
G2: 2.2a.1 Read & understand Signs, Labels, Notices	Spelling G2: 2.2c.2 Phonetic cues in reading
G3: 3.3a.1 Capital letters full stops and question marks	Punct. G3: 3.4c.3 Structures of English (Collective nouns)
G4: 2.7d.1 Review information (Abbreviations etc.)	Lang. use G4: 3.6b.3 Use of the Apostrophe
G5: 2.7e.5 Literary devices (Proverbs)	Speech G5: 2.7c.3 Choose vocabulary
G6: 3.1c.1 Grammatical constructions (Passive Tense)	Verbs G6: 3.7c.4 Lexical features
Cover Up	Librarian
G1: 2.1b.1 Recognise simple words (adjectives)	Adjectives G1: 2.2c.1 Use initial letters to recognise words
G2: 2.2e.2 Respond to poems (rhyming words)	Sounds G2: 4.2c.2 Spell a wider range of words (plurals)
G3: 3.3e.6 Masculine to feminine nouns	Nouns G3: 2.3c.3 Appreciate links between words and sounds
G4: 4.3c.1 Awareness of word relationships (opposites)	Pairs G4: 3.4e.2 Revise & redraft writing (descriptive words)
G5: 4.5.5a Spell words of greater complexity	Spelling G5: 2.7e.2 Use of literary devices - Similes
G6: 2.8e.1 Lang. change over time	Lang. Use G6: 3.7c.4 Choose a wider vocabulary
Word Fit	Cheers
G1: 4.2c.1 Spelling patterns (blends)	Words G1: 3.3e.6 Check for consistent use of comparatives
G2: 4.3c.2 Awareness of word relationships (synonyms)	Pairs G2: 3.6a.3 Simple use of past tense
G3: 3.3a.1 Sentence structure	Verbs G3: 2.5e.1 Word play
G4: 2.5e.3 Awareness of choice of words	Sounds G4: 3.5e.1 Use and misuse of colloquialisms
G5: 2.5e.3 Unconventional spellings	Nouns G5: 3.7b.2 More complex punctuation
G6: 4.5.6b Common misspellings	Spelling G6: 3.6c.3 Poetical constructions

## Before you buy ANY educational software ASK these questions:

- Is it designed and developed in **BRITAIN** and directly linked to the **NATIONAL CURRICULUM**?
- Has it been designed to use the **POWER** of your 16 or 32-bit computer and not just converted from an existing 8-bit product?
- Does it **MOTIVATE** and **REWARD** the children?
- Is children's progress constantly **MONITORED** and **RECORDED**?
- Can it be **CUSTOMISED** to meet your child's needs?
- Do parents and teachers agree on its **QUALITY**?
- Will it **EDUCATE** your child now but also have sufficient **FLEXIBILITY** to last for several years without the need to purchase the next level?
- Are the producers **CONFIDENT** enough in its quality to let you test it yourself **FREE** - at home or in school?
- Does it **CHALLENGE** more able students but also have levels for beginners?
- Are there **CLEAR** and **OBVIOUS** educational objectives?

If any answer is no, it's not 10 out of 10!

## Coming soon in 1993

- ✓ French
- ✓ German
- ✓ Science
- ✓ Maths (Algebra)
- ✓ Spanish
- ✓ Italian
- ✓ Junior Essentials



Please ring for availability

☎ 0742 780370

# QUICK ON THE DRAW

Paul James looks at CADet, Minerva's latest venture into computer-aided design

**D**raughting is a slow process and CADet offers some apparently useful tools to help make an accurate and easy to follow drawing. After all, the result of a draught is often made into a three-dimensional object.

Draughting basically consists of joining two points together with a line. Finding where these two points exist on the paper is what takes the most time, and involves the most knowledge. For instance, finding the centre point of a line calls for some deft manoeuvring with a pair of compasses.

With CADet, all you do is turn on the centre of line snap, and when the cursor passes within the proximity of the centre, a snapping sound is made and you know then that anything that you draw will radiate from that point.

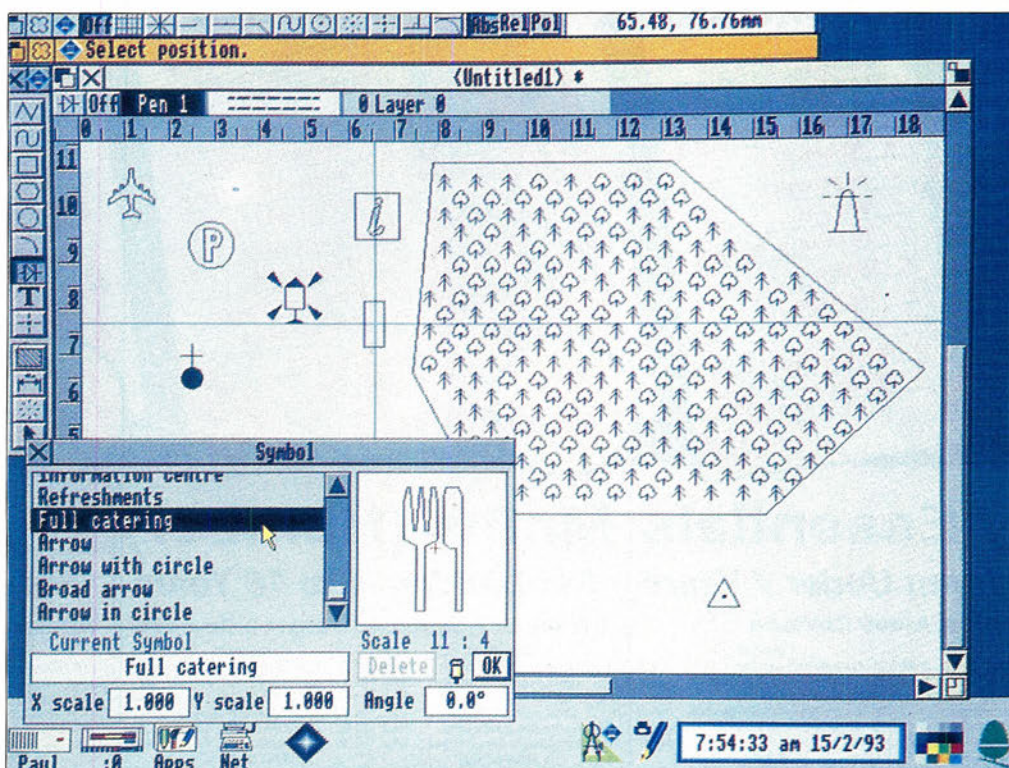
In fact the snapping tools are CADet's best feature, and drawings can quickly be built up without worrying about measurements or a grid at all.

## LAYING IT OUT

CADet's main window can be surrounded by several 'bars'. The Tool bar is similar to the one in Draw. The usual tools are on there, and a few others are glued on to offer further features. For instance, there is a polygon tool that allows polygons of a definable number of sides to be created. If the way a tool operates is definable, then there is a further menu, accessed by clicking Adjust over its icon.

The Snaps bar quickly allows you to define the snapping options. Co-ordinates can be displayed in three formats. Absolute Format displays the co-ordinates of the cursor as though you measured the position of your pencil from the corner of your paper.

Relative format measures from the last position of the cursor when a mouse button



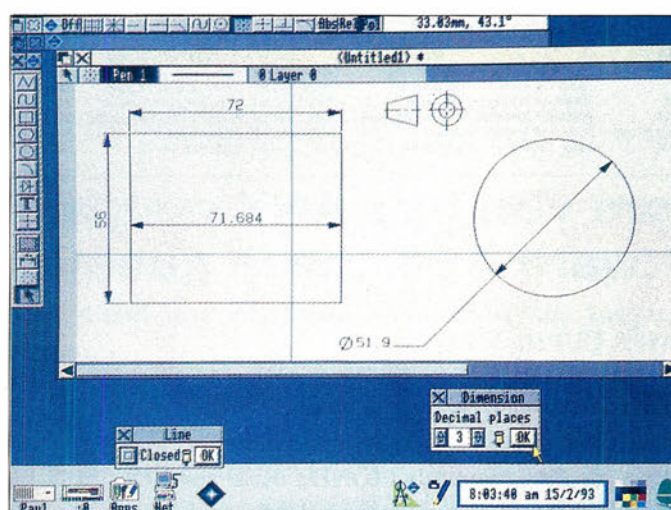
CADet is well-equipped for drawing Ordnance Survey maps

was clicked. Third, and most useful, are polar co-ordinates, which measure the distance and angle from the last point.

Inside the actual drawing window you are shown the current tool in use, the current style of line you are drawing with, the pen colour and which layer of the picture you are working on. Layers can be hidden, and made inactive so, for instance, if you had a standard shape like a room then all the objects in the room can exist as other objects, and can be moved around the room shape without effecting it.

The Preference menu contains many things. For instance, you can choose to auto-save your drawing into a specified directory, you can specify which units CADet works in, or choose whether a snapping sound is made when a snap occurs.

A path is made up of a series of lines. If you've used Draw, you will know what I



Most dimensioning is easy with CADet. In the example above, I plotted the measurements of both sides of the rectangle. Then I picked the first point, the second point, and defined where the dimension line rests. However, to get angled dimension lines, you have to rotate horizontal or vertical ones

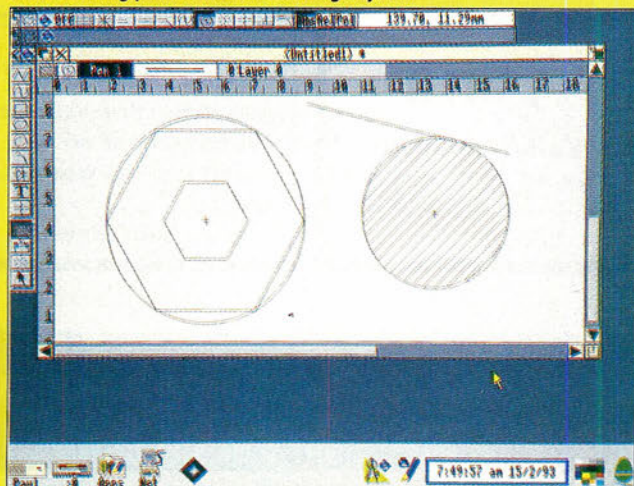
mean. However, for some reason, CADet's path creating function is not even as flexible as Draw's, you can't draw a straight line, and then carry on the path with a curved line and

then swap back to straight line segments, which is at times very constricting. In fact, if you try this, then you lose the path and have to start over again. The ability to draw

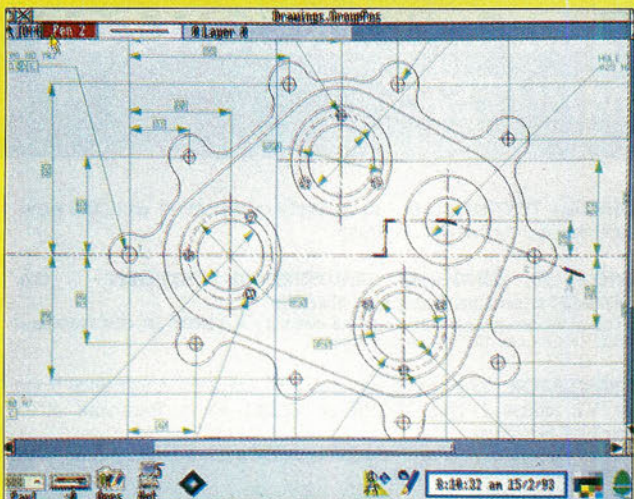
## SNAP TO IT

Snaps are undoubtedly *CADet*'s most powerful feature, and drawings can quickly be built up simply by relying on the relationship between one line and another. I've drawn a representation, shown below, of a nut by drawing two hexagons snapped around a centre point, and next to it I've drawn a line at a tangent to the circle by using the tangent snap. These are elements of a drawing that would have taken about five minutes to construct on paper with a pair of compasses and a ruler, but using *CADet* it took me 10 seconds.

While creating paths, snapping to a grid is controlled from the Snap bar, as is snapping to orthogonals. The orthogonal snap is most useful and, when this is on, the cursor will snap to right angles and 45-degree angles relative to the last point in the path. All other snaps will work while creating paths and manoeuvring objects.



Need simple shapes? Here's the snap list for the shot above: Snap to grid/Snap to Orthogonal Grid/Snap to end of path/Snap to middle of line/Snap to line join/Snap to curve join/Snap to circle centre/Snap to circle/Quadrant Snap to Point/Snap to right angle/Snap to tangent



Well, I didn't draw the picture above, but it shows what you can achieve when you really get into snapping

paths with fillets goes some way to helping with this quirk. In *Draw*, you can finish a path in one of two ways, double clicking with Select or clicking with Adjust. So why does *CADet* only offer the first option? Once a path has been drawn, then there is no way of going back and continuing it. The only way to do this is to

add new control points to the last line segment.

Curve creation is as basic as that of Risc OS 2 *Draw*, with no facility to flatten a curve or add control points to a curve element without altering the way the curve looks. Since path creation is a major aspect of drawing with a package such as this, I feel it has not

been given enough thought while writing *CADet*.

One rather good way of entering paths is to type the co-ordinates directly into the co-ordinates box on the snap bar. For instance, to draw a square using polar co-ordinates, you type 10cm 0 degrees, 10cm 90 degrees, 10cm 270 degrees. Unfortunately, there is no way to specify the end of a path in this way, so you have to place the last point with the mouse.

I liked the Arc creation tool, which when combined with Snaps makes creating an arc easy. Cross-points can also be added by choosing the Point tool and clicking.

Polygons of up to 50 sides can be easily drawn and, in common with other objects in *CADet*, they can be drawn in several different ways, depending on which one suits the current snap. For instance, a rectangle object can be drawn around its centre point, or one of its corners.

So, if you wanted to draw two rectangles with the same centre point, you would set the rectangle tool to draw from the centre vertex and use snap to centre of object.

## BEING SELECTIVE

Once an object is created you are probably going to want to move it around, group it with other objects, and move the groups around.

All objects in *CADet* are moved by reference points, the positions of which are defined when Group is chosen from the menu. Objects are added to the selection by clicking Adjust, as in *Draw*. But, unlike *Draw*, a selection of objects can't be moved until they are grouped together.

Grabbing hold of certain objects is quite tricky and, again unlike *Draw*, when you've selected an object you can't simply re-size it or rotate it by tweaking the ears on the bounding box, because there aren't any. Objects can only be rotated and scaled by the transform dialogue box.

Symbols form a large part of draughting. Common symbols that are often added to drawings include the centre line symbol and the diameter symbol. These symbols are included as part of a symbol

library supplied with *CADet* (others include OS map and electronics circuit symbols). These libraries are loaded into *CADet*, and then any symbol can be chosen and placed on the drawing, at any scale or angle. Elements of your own drawings can also be made into symbols and saved as part of a symbol library.

Text in *CADet* is not plotted in the normal Risc OS outline fonts, but it matches plotter fonts. Write your words and then you can place them anywhere on the page by clicking Select. Styles can be chosen, as can the size of the text, from the Style submenu.

Objects can be selected and given an area fill. The most common type of fill in draughting is the crosshatch, and this is at the top of the list in *CADet*. The angle of the hatching can be specified, as can the density. When the area fill is chosen, *CADet* creates the fill as another object which exists inside the object filled; if you alter the shape of that object afterwards, then you'll have to delete the fill and re-fill the shape.

## PASSING OUT

*CADet* is a strange package. Some things it does very well, but it is often quirky, which can lead to confusion and frustration. It seems very sound and didn't crash for the period of the review. The whole package has been designed to output in Hewlett Packard graphics language, so I can't see any problems with plotters.

*CADet* basically restricts itself to offering the bare minimum of tools you'll need to draught a drawing. Isometric design is limited; there is no way to draw isometric curves or circles, for instance.

It is well equipped to draw maps, with an OS symbol library, and flood fills that offer a good range of other standard symbols, and I imagine it will prove useful in many educational areas.

## PRODUCT DETAILS

Product: *CADet*  
Supplier: Minerva Software,  
Minerva House, Baring Crescent,  
Exeter EX1 1TL  
Tel: (0392) 437756  
Price: £149+VAT

## Impression Resource Disc

Filled with over a 100 borders and a range of useful clip art files. Includes a selection of Impression files full of how to do hints and tips written by a professional Impression trainer. £7.95

Also the **Impression Junior Resource Disc** as above with working borders £7.95

### Parish Magazine Clip Art Set



Four discs  
£16.98

ClearView files, with free copy of ClearView

EuroFactfile for the New Europe £6.95

Scientists & Inventors 300+ biographies £8.95

Christopher Columbus' first voyage £6.95

National Parks (for key stage 2) £8.95

ClearView Standard version £10.00

ClearView Advanced version NEW PRICE £25.50

### Fonts

Script - script font + free decorative alphabet £8.47

Box - automatically gives boxed text - 4 styles £8.47

All prices ex. VAT

Over 1800 clip art files are now available - select your own collection of files with the Auto-Catalogue

Send £1 for the Auto-Catalogue & ClearView Demo disc (free with order)

Add VAT at 17.5% and £1 postage to all orders.

School order forms accepted

**DEC DATA**

PO Box 97, Exeter, EX4 4YA

for Clip Art,

Resource Files

and Software

0392 221702

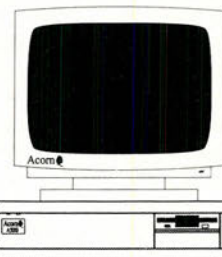
## LOWEST ADVERTISED PRICES



### A5000 Learning Curve

### Multisync System

ONLY £1299



### A4 Portable 60Mb HD

ONLY £1475

Phone for prices of other models !



## Turing Tools

149 Campbell Rd, Cowley, Oxford OX4 3NX, UK

Tel (0865) 775059



## !IronMask File Security System

**!IronMask 1.2 Personal Edn. £49.00 inc.**

Damage, theft and snoop protection for key files and directories. Drag-and-drop with password to secure or release. Secure files are completely shielded from access, use or modification and can only be released through !IronMask.

**!IronMask 2.0 Multi-User Edn. £65.00 inc.**

All the capability of !IronMask 1.2, plus: Up to 64 PIN identified users under superuser / administrator control. No-body can run !IronMask 2.0 processes without a PIN. Passwords can be defaulted to PIN for easy use. Time-out feature guards against opportunistic entry. Superusers can "freeze" strategic directories - contents can be read or run transparently but modified or deleted only with super-user identification.

Prices quoted for 1 computer. No VAT. British Isles postage included. Overseas add £3.00. ☐ for educational and site prices, further information or factsheets.

## A3010

### Family Solution

ONLY £382

### \*Mail Order Only\*

Education orders welcome.

VAT extra on all prices.

Access and Visa welcome.

Carriage £8

Next day supplement £5

**MICRO DISCOUNT** phone 031-668 4700  
55 Clerk Street, Edinburgh, EH8 9JQ.

# HARDWARE AND SOFTWARE EXPANSION FOR ACORN COMPUTERS

**DUAL RS423 SERIAL INTERFACE** - two additional RS423 serial interfaces for communicating with RS423 or RS232 devices eg modems (in order to use bulletin boards), printers, plotters, instruments, etc. Up to four cards can be fitted in a computer.

**IEEE488 INTERFACE** - enables up to 14 test and measurement instruments, from well known manufacturers such as Hewlett-Packard, Fluke, Philips, Tektronix, etc. to be connected to the computer. For example, voltmeters, oscilloscopes, spectrum analysers, function generators, counters, logic analysers, programmable power supplies, plotters, printers, etc.

**16 BIT PARALLEL I/O** - provides two separate 16 bit input/output ports. Other facilities include four 16 bit counter/timers, two 8 bit shift registers and eight interrupt inputs. Applications range from measurement and control to high speed data input and output.

**12 BIT ADC** - provides eight single ended inputs each with an input voltage range of -5 to +5 Volts. Up to 166,000 samples per second can be taken.

**STEBus INTERFACE** - overcomes the limitation of a maximum of four expansion cards in a computer by enabling the use of industry standard STEbus boards in an external input/output sub-system for measurement and control applications.

**SCSI DEVICES** - internal and external hard disc drives, magneto-optical removable disc drives, tape streamers etc.

**FORTAN 77 COMPILER** - completely compatible with the now discontinued Acornsoft compiler.

**GINO-F 3D, GINOGRAPH, GINOSURF and HERSHEY+** - the FORTRAN subroutine graphics libraries.

Intelligent Interfaces are Bradley Associates distributor for GINO-F 3D, GINOGRAPH and GINOSURF for Acorn RISC OS-based computers.

**TERMULATOR** - enables a computer to emulate a terminal from the VT range (VT52, VT102 or VT220) or a Tektronix 4010 graphics terminal.

Termulator a trade mark of Acorn Computers Limited is applied to this product under licence from Acorn Computers Limited.

**COMPLETE SYSTEMS** - configured to customer's requirements by fitting RAM upgrades, hard discs, expansion cards, etc.

**ADVICE - SUPPLY - SUPPORT** - Intelligent Interfaces were established in 1981 and have enjoyed a long relationship with Acorn Computers. This places them in an ideal position to advise on, supply and support systems purchased from them.

**Intelligent Interfaces Ltd**

P O Box 80

Eastleigh

Hants

SO5 5YX

Tel: 0703 261514 Fax: 0703 267904

**INTELLIGENT  
INTERFACES**

# IN BRIEF

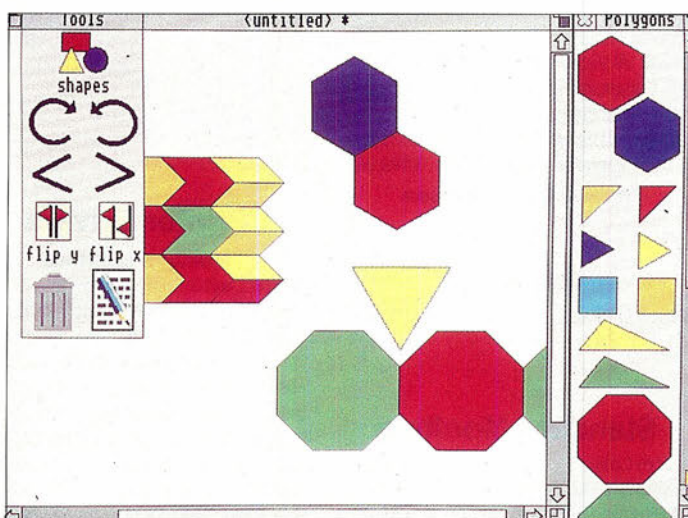
Swift looks at My World 2, NW Semerc's special-needs art program, and Symphony, the latest approach to music sequencing

## MY WORLD 2

Northwest Semerc  
Tel: 061-627 4469  
Price: £28.95 (£2.50 p&p)

Most teachers of young children and those with special educational needs are already using *My World* from Northwest Semerc. The software is a 'fuzzy felt' concept, allowing children to place shapes on a board, move them around and place text alongside them. To help users with motor difficulties the felt is moved by two clicks, not a dragging process.

The package has become widely used since it allows users to create their own packs of 'felt' pieces and screens to support various areas of the curriculum. With *My World 2* it is now possible to have sets of



My World allows children to build up pictures from 'felt' shapes

'felt' pieces held under one button, in order to give pupils more variety of pieces without cluttering up the screen. These

are accessed by clicking to get the library window on screen and two clicks to choose and place items as before. Sizing

and rotating items is also allowed by use of extra icons on the screen, and grid lock is available to allow for accurate placing by children with poor motor control. This version also allows more than one screen to tell different parts of the story.

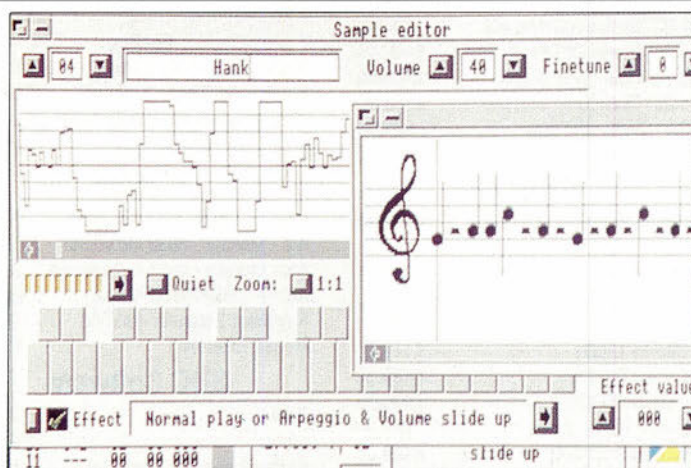
The old curriculum packs work with this new version of *My World* but, as yet, the facility for making up a new disc containing the software and screens has not been upgraded, so teachers will need to have some understanding of screen windows and file transfer to make these screens work. Hopefully this will not prevent anyone working to produce screens, since it is that work that makes this package such a powerful tool.

Clare Johnson

## DIGITAL SYMPHONY

Oregan Software  
Developments  
Tel: 021-353 6044  
Price: £49.95

They're back . . . A few months ago *BAU* told you about the doings of the 'mysterious Tracker cult', individuals who create music for the Arc's internal sound in a format derived from the Amiga's *SoundTracker*. *SoundTracker* output bears more similarity to assembly code than to standard musical notation, but aficionados seem to like it that way. The main attraction is that the format generates quite small files and there are numerous uncopyrighted playback modules. Given this and the number of *SoundTracker* tunes and samples in the public domain, *SoundTracker* files have become an almost 'standard' way to incorporate tunes into Arc programs, particularly games. And, the cult is growing with an increasing



Symphony has all the bells and whistles a Tracker fan may need

number of 'SoundTrack Editors' on the market of which *Digital Symphony* is the latest.

The first thing that struck me about *Symphony* was that, once installed, very little happened. I mean, it played a tune, but where were the windows full of bobbing VU-meters, oscilloscope displays and scrolling columns of figures? Careful investigation however, revealed more windows than I could shake a fist

at. I also found the Monitor option that exchanges the desktop for a full-screen display of the track.

Oregan's approach to editing is unusual. Rather than edit events on several sound channels simultaneously, *Symphony* edits a single group of 64 events on one channel at a time. This means that space which might be taken up by other channels is used to give information about samples and

sound fx in current use. Patterns are released from a pattern list and the tune is arranged by placing patterns in a sequence editor.

*Symphony*'s two most striking features are the rudimentary 'score' display, which shows the current pattern as musical notes and the inbuilt 'Sound Sample Editing Suite'. This allows you to load up a sample, cut it, loop it and play it back from a piano-style keyboard on screen.

It would be impossible to look at this program and not make comparisons with *Desk-Top Tracker*. They both accept a wide range of file and sample formats, both allow Midi input and both come with playback 'freeware'. DTT has its sixteen channel multiplexing and *Symphony* its sample editing and 100% compatibility with *SoundTracker*. Which one you choose is very much a matter of taste. To try out *Symphony*, send a disc and sae to Oregan, and the company will send you a demo version.

Richard Garrett



**061 766 8423**

Phone lines open :-  
Mon - Fri 09.00 - 17.00  
Sat 10.00 - 17.00  
**FAX: 061 766 8425**

## New Acorn Hardware

### Official Acorn Publishing Dealer

A540 4Mb Ram, 120Mb HD	£1995.00
A4 4/60 Mb HD Portable	
c/w Acorn shoulder bag	£1699.00
A4 2 Mb FD Portable	£1399.00
A5000 / 2Mb Ram, 80Mb HD,	
Arm 3, Acorn Multiscan Monitor	£1399.00
A5000 / Learning Curve / 2Mb Ram	
as above c/w software	£1445.96
A5000 / 4Mb Ram, 120Mb HD	
Arm 3, Acorn Multiscan Monitor	£1599.00
A5000 ES - Econet System	
Arm 3, Acorn Multiscan Monitor	£1299.00
A5000 NS - Network System	
Arm 3, Acorn Multiscan Monitor	£1399.00
A4000 Home Office System	
Arm 250, Acorn Monitor	£999.00
A4000 Home Office Multiscan System	
Arm 250, Acorn Multiscan Monitor	£1049.00
A4000 HD 80 System	
Arm 250, Acorn Monitor	£949.00
A4000 HD 80 Multiscan System	
Arm 250, Acorn Monitor	£999.00
A3010 Family Solution	
Arm 250, TV Modulator	£424.68
A3010 / 2Mb Learning Curve System	
Arm 250, Acorn Monitor	£680.00
A3020 / 2Mb FD System	
Arm 250, Acorn Monitor	£749.00
A3020 / 2Mb FD Multiscan System	
Arm 250, Acorn Multiscan Monitor	£799.00
A3020 / 2Mb HD 60 System	
Arm 250, Acorn Monitor	£899.00
A3020 / 2Mb HD 60 Multiscan System	
Arm 250, Acorn Multiscan Monitor	£949.00

**A Finance option is available  
on the above machines  
(14.7% APR)**

Written details available on request

## Acorn Special Needs Centre We operate the Acorn Teacher and Academic Schemes

Please call for free information packs

### A540 Upgrades

4Mb Ram Upgrade	£299.00
Taxan 795 VDC Modes Disc	£7.50
Technical Reference Manual	£65.00

### A5000 Upgrades

2Mb Ram Card	£110.00
Dust Cover (One piece)	£12.95
Technical Reference Manual	£65.00

### A3000 Upgrades

1 Mb Ram A3010 (2Mb in total)	£49.00
4 Mb Ram A3010	£128.00
A3010 to AKF12/17 adaptor	£9.95
1 Mb Ram (2 Mb in total)	£45.00
4 Mb Ram	£128.00
20 Mb Int Hard Disc (IDE)	£199.00
5.25" External f/disc buffer	£39.00
Joystick (Quickshot III)	£12.00
Joystick Interface	£32.00
Serial Upgrade	£19.00
User & Analogue Podule	£46.00
User & Midi Podule	£46.00

## A400 Upgrades

1 Mb Ram	£35.00
2 Mb Ram	£65.00
3 Mb Ram	£99.00
5.25" Ext. floppy disc int.	£39.00

## A4 Upgrades

A4 2 MB RAM Upgrade	£110.00
A4 60 MB HD Upgrade	£350.00
A4 Battery Pack	£50.00
A4 Econet Upgrade	£50.00
A4 Shoulder Bag	£35.00
A4 Technical Reference Manual	£65.00

## RISC OS 3

RISC OS 2 -> 3.1 Upgrade	£41.70
RISC OS 3 -> 3.1 Upgrade	£16.17
RISC OS 3 Hardware Kit A300	£25.00

## Expansion Cards

Econet Module	£46.00
Hawk V9 Video Digitiser	£199.00
I/O Expansion Card	£79.00
Midi Expansion Card	£65.00
SCSI Expansion Card (Acorn)	£229.00
SCSI Expansion Card (Morley)	£149.00

## ROMBO Colour Digitisers

A3000 inc. module housing	£72.30
A400 / A5000	£72.30

## Aleph 1

Arm 3 Upgrade	£175.00
386 PC Expansion Card 1Mb	£390.00
386 PC Expansion Card 4Mb	£485.00
486 PC Expansion Card 4Mb	£585.00

## Standard Monitors

Acorn Colour	£199.00
Microvitec Cub 3000	£199.00
Philips Mono (Green)	£85.00

All monitors come with free lead. State type of computer when ordering.

## Multiscan Monitors

Acorn Multiscan AKF18	£299.00
Taxan 795 Multivision	£449.00

## Floppy Disc Drives

5.25" Single 40/80 no psu	£95.00
5.25" Single 40/80 with psu	£109.00
5.25" Dual 40/80 no psu	£185.00
5.25" Dual 40/80 with psu	£199.00
3.5" Single with psu	£85.00
3.5" + 5.25" 40/80 with psu	£209.00

## Printers

Canon Bubblejet BJ-10ex	£172.00
Canon BJ10ex inc. turbo driver	£219.00
Sheetfeeder for BJ-10ex	£48.00
Canon BJ200	£299.00
Canon BJC800 (col.) inc. s/w	£1469.00
Citizen 120D+	£114.00
Citizen Swift 9	£169.00
Citizen Swift 240	£239.00
Colour Kit for above	£29.00
Citizen Swift 200	£199.00
Citizen Swift 200 Colour	£225.00
Citizen Swift 128K Memory	£35.00
Integrex Colourjet 132	£519.00
HP Deskjet 500	£299.00
HP Deskjet 550C	£449.00
Laser Direct (LBP4 Hi Res.)	£849.00
Laser Direct (LBP8 Hi Res.)	£1279.00

## Econet

Level 4 AUN Software	£399.00
----------------------	---------

## Scanners

Flatbed A4 256 Grey SCSI (CC)	£745.00
Flatbed A4 without SCSI card	£585.00
Scan Junior Scanner 256	£199.00
Scanlight Senior Scanner A4	£289.00
Sheet Feeder for above A4	£135.00

## Fax

Fax Pack (CC)	£259.00
---------------	---------

# FREE

## Acorn - 3 Years On Site Warranty on all Acorn Hardware\* purchased from Dabhand Computing

\*excludes Acorn Purchase Schemes / Education Schemes  
A4 Portable / Acorn Printer

## Printer Drivers

### Midnight Graphics

Citizen Swift 9 Sprite Dump	£26.04
Citizen Swift 24 Sprite Dump	£26.04
Epson 24 Sprite Dump	£26.04
HP Deskjet 500C Sprite Dump	£26.04
HP Paintjet Sprite Dump	£26.04
Integrex 132 Sprite Dump	£26.04
Integrex Colourcel Sprite Dump	£26.04
Juki 5520 Sprite Dump	£26.04
Star LC10 Sprite Dump	£26.04
Star XB24 Sprite Dump	£26.04
Star LC200 Sprite Dump	£26.04
Star LC24-200 Sprite Dump	£26.04

### Ace Computing

Printer JX (Colour Dot Matrix)	£14.00
Printer DJ (Deskjet 500C)	£14.00
Printer PJ (Paintjet)	£14.00
PRO Drivers (All)	£40.00

### Beebug

Deskjet 500/550C Driver	£15.00
Star/Epson/Citizen (Colour)	£15.00

### Electronic Font Foundry

BubbleJet - BJ10e/130e	£10.00
------------------------	--------

## Cables

Arc - 15 Pin to 9 Pin Adaptors	£9.95
Arc - Monitor - 8833 inc sound	£8.65
Arc - Monitor - 8833 II inc sound	£8.65
Arc - Parallel Printer Cable	£5.00
Keyboard Extender 400/500	£7.50
Mouse Extender	£7.50

## BBC Software

Blob 1	£18.00
Blob 2	£18.00
Chick Chase (80 Track Only)	£15.00
E-Type	£13.00
Master Break	£10.39
Modem Master	£11.26
Play it Again Sam No's 1 - 16 ea.	£11.95
Reversals (80 Track Only)	£20.00
UIM	£14.95
Where's Blob	£18.00

## Master Compact

Play It Again Sam No's 1 - 16 ea.	£13.00
UIM	£14.95

## Archimedes Software

### 4 Mation

Chameleon	£35.00
Desktop Basic Editor	£25.00
Jiglet	£25.00
Jigsaw	£27.00
Noot	£50.00

Poster	£75.00
SmArt	£50.00
SmArtFiler	£32.00
Snippet	£35.00
Vector	£75.00

### Ace Computing

ArcLight	£40.00
Euclid 2	£40.00
Mogul	£17.00
Splice	£26.00
Tween	£26.00

### Acorn Computers

1st Word Plus	£65.00
Desktop Assembler (V 2)	£119.00
Desktop C (V 4)	£180.00
Font Starter Pack	£39.00
Newhall Font Pack	£39.00
PC Emulator / Free Shareware	£95.00
TCP/IP Programers Pack	£50.00
TCP/IP Protocol Suite	£199.00

### Arxe Systems

MultiFS	£27.00
---------	--------

### Beebug

DeskEdit	£21.00
Desktop Thesaurus	£19.00
Hard Disc Companion 2	£45.00
Hearsay II	£69.00
Masterfile 3	£50.00
Ovation	£85.00
Playback	£19.00

### Brilliant Computing

Everyday Signs	£20.00
Joystick Games	£20.00
Streetwise	£20.00
Switch On	£20.00
Switch On Actions	£20.00
Teds Adventures	£20.00

### Clares Micro Supplies

Artisan 2	£45.00
Fervour	£19.00
Illusionist	£79.00
Interdictor	£10.00
Interdictor II	£23.00
ProArtisan	£70.00
Render Bender 2	£99.00
Rhapsody 2	£45.00
Schema	£90.00

### Coin Age

Pesky Muskrats	£14.00
----------------	--------

### Colton Software

Pipedream 3	£105.00
Pipedream 4	£148.00

### Computer Concepts

AvanteGarde Font Pack	£24.00
ArtWorks	£129.00

Bookman Font Pack	£24.00
Canon BJ10e/x Driver	£42.00
Canon BJC800 Driver	£95.00
Compression	£34.00
Equasor	£37.00
Graphics Card	£249.00
Impression II Borders Disc	£12.00
Impression Business Supplement	£39.00
Impression II Free Drawfile Disc	£124.00
Impression Junior	£69.00
Inter-Word	£29.00
Show Page	£109.00

#### Cygnus Software

Iron Lord	£14.00
Tower of Babel	£14.00
Twin World	£14.00

#### Dabhand Computing

Arc DFS	£22.00
---------	--------

#### Database Software

Fun School 3 under 5s	£16.95
Fun School 3 5-7 year olds	£16.95
Fun School 3 over 7s	£16.95
Fun School 4 under 5s	£20.00
Fun School 4 5-7 year olds	£20.00
Fun School 4 7-11 year olds	£20.00

#### Domark

3D Construction Kit	£25.00
Mig29 Super Fulcrum	£29.00
Trivial Pursuit	£22.00

#### Dyslexia Software

Specialist software for all ages -  
home / education

Call for details

#### Empire

Pipemania	£16.00
-----------	--------

#### Electromusic Research

Creations Discs 1-8 ea.	£19.00
MIDI Analyser	£29.00
Microstudio	£78.00
Music Player	£35.00
RhythmBox	£29.00
SoundSynth	£39.00
Studio 24 Plus	£149.00

#### ESM

Desktop Folio	£79.00
---------------	--------

#### Hybrid

Elite	£31.95
-------	--------

#### Icon Technology

EasiWriter	£115.00
TechWriter	£195.00

#### Krisalis Software

Chuck Rock	£19.00
Gods	£19.00
James Pond	£19.00
Krisalis Collection - Pipemania / Revelation / Mad Professor Mariarti / Terramex	£22.00
Lemmings	£19.00
Mad Professor Mariarti	£14.00
Manchester United Europe	£19.00
Nebulus	£19.00
Populous	£22.00
Swiv	£19.00
Turbo Challenge 2	£19.00
World Champ. Boxing Manager	£18.00
World Championship Squash	£18.00

#### Leading Edge

Investigator II	£22.00
Joystick Interface (All Models)	£32.00
Tracker	£37.00

#### Lingenuity

CableNews	£149.00
HotLink Presenter	£29.00
Presenter GTI	£69.00

#### Longman Logotron

ArcComm 2	£49.00
Eureka!	£99.00
Landmarks Aztec	£19.00
Landmarks Columbus	£19.00
Landmarks Egypt	£19.00
Landmarks Rainforest	£19.00

Landmarks Victorians	£19.00
Landmarks World War II	£19.00
Magpie	£40.00
Notate	£49.00
Numerator	£60.00
Numerator Chaos	£18.00
Pendown	£54.00
Pendown Outline Fonts	£18.00
Pinpoint	£75.00
Pinpoint Junior	£23.00
Revelation 2	£95.00
Revelation ImagePro	£139.00
SkyHunter	£22.00

#### Matt Black

Spheres of Chaos	£19.00
------------------	--------

#### MicroPower

Chess 3D	£14.00
Zelanites	£15.00

#### Midnight Graphics

ClipArt 1 over 480 images	£29.95
ClipArt 2 over 350 images	£29.95
Express	£51.02
Tracer	£52.13

#### Minerva Software

##### Applications

Ancestry	£59.00
Atelier	£69.00
Cadet	£149.00
Desktop Office 2	£79.00
Easiword 2	£54.00
Flexifile	£89.00
Graphbox	£55.00
Graphbox Professional	£105.00
Home/Club Accounts	£34.00
Linkword - French	£35.00
Linkword - German	£35.00
Linkword - Spanish	£35.00
Multistore II	£179.00
PCAccess	£19.00
PrimeArt	£69.00
Timetabler	£599.00

##### Leisure

Bughunter in Space	£11.00
Bug Hunter / Moon Dash	£11.00
Casino	£11.00
Caverns	£11.00
Family Favorites	£11.00
Freddy's Folly	£11.00
Hoverbod	£11.00
Ibix the Viking	£11.00
Jet Fighter	£11.00
Maddingly Hall	£11.00
Orion	£11.00
Redshift	£11.00
Talisman	£11.00
Thundermonk	£11.00

#### Northwest SEMERC \*

Conform Keyboard Software	£18.00
Le Monde a Moi	£18.00
Meine Welt	£18.00
My World (Program)	£18.00
My World 2	£28.00
My World - Christmas Disc	£9.00
My World - Design	£9.00
My World - Fuzz Buzz	£12.00
My World - Geog. Key Stage 1	£9.00
My World - I'm Special	£9.00
My World - Nursery Disc	£9.00
My World - Maths	£9.00
My World - Patterns	£9.00
My World - Sampler	£9.00
My World - Skeletons	£9.00
My World - Village/Town	£9.00
Oldham Keyboard	£99.00
Full Phases	£28.00
Phases 2	£18.00
Phases 3	£25.00
Phases - Borders disc	£9.00
Phases - Christmas disc	£9.00
Phases - Clip Art 1	£9.00
Phases - Very Hungry Caterpillar	£9.00

\* Please add £2.50 P&P to SEMERC Software

#### Oak Solutions

Draw, Print and Plot	£39.00
Genesis II	£99.00
Worra Battle	£10.00
WorraCAD	£74.00

#### Sherston Software

!Draw Help	£15.95
!Help (RISC OS 2)	£7.95
!Help 3 (RISC OS 3)	£9.95
Animated Alphabet	£19.00
Arcventure I - Romans	£25.00
Arcventure II - Egyptians	£25.00
Dreamtime	£20.00
Farm	£19.00
Fleet Street Phantom	£23.00
Glimpse	£8.50
Mapventure	£23.00
Microbugs	£25.00
Nature Park Adventure	£24.50
Selladore Tales	£24.00
Space Mission Mada	£23.00
Stig of the Dump	£22.00
Story Starts	£25.00
Teachers Cupboard	£24.50
Teddy Bears Picnic	£23.00
Viewpoints	£35.00
Wizards Revenge	£17.00
Worst Witch	£21.50

#### SIMMIS

Flight Sim Toolkit	£31.00
--------------------	--------

#### Storm Software

Adventure Playground	£17.00
Coffee	£27.00
Flight Path	£27.00
Search and Rescue	£27.00

#### Superior Software

Air Supremacy	£14.00
Conqueror	£15.00
Hostages	£14.00
Master Break	£14.00
Play it again Sam 1	£19.00
Repton 3	£14.00
Speech!	£14.00
Superior Golf	£14.00
The Last Ninja	£19.00
Zarch	£14.00

#### The Data Store

FontFX	£9.95
ShapeFX	£9.95

#### The Fourth Dimension

Apocalypse	£14.00
Articulate	£14.00
Arctist	£14.00
Boogie Buggy	£14.00
Break 147 / Superpool	£25.00
Black Angel	£28.00
Cataclysm	£18.00
Chocks Away 2	£18.00
Chocks Away Extra Missions	£14.00
Chocks Away 2 + Ext. Missions	£27.00
Chopper Force	£22.00
E-Type Compendium	£18.00
Enter The Realm	£18.00
Grievous Bodily 'ARM	£18.00
Holed Out Compendium	£18.00
Nevryon	£14.00
Pandora's Box	£18.00
Powerband	£14.00
Pysanki	£14.00
Saloon Cars - Deluxe	£25.00
The Real McCoy 1	£23.00
The Real McCoy 2	£23.00
The Real McCoy 3	£23.00
The Wimp Game	£14.00
X-Fire	£18.00

#### Triple R Education

10 out of 10 English	£19.00
10 out of 10 Maths	£19.00
Converta-Key	£14.00
Data Word	£14.00
Money Matters	£14.00
Picture Book	£14.00
Target Maths	£14.00

## Books (No VAT)

Archimedes Assembly Language	£14.95
Archimedes Operating System	£14.95
The above books have accompanying discs add £5 for 5.25", £7 for 3.5"	
C: A Dabhand Guide 3rd Edition	£16.95
A3000 Technical Guide	£29.95
Assembler Release 2	£25.00
BASIC V: A Dabhand Guide	£9.95
BBC Basic Guide (Acorn)	£19.95
Budget DTP (Draw & Edit)	£12.95
DTP Seeds (4Mation)	£8.45
Desktop C Release 4	£25.00
Desktop Development UG	£25.00
First Word Plus V2	£10.00
M128 Ref. Man.Pts 1&2 (ea.)	£14.95
Programming in Ansi C	£14.95
RISCOS 3 PRM's	£TBA
Understanding Spreadsheets	£9.95

#### Hours of Opening

Monday - Friday 9.00 a.m. - 5.00 p.m.  
Saturday 10.00 a.m. - 5.00 p.m.  
Lunch 1.00 p.m. - 1.30 p.m.

#### How to find us



#### Important Facts

- **NO Minimum Order Value**
- **NO Carriage Charges in Mainland UK**
- **ALL Goods Despatched within 24 Hours, subject to stock levels**
- **Acorn Qualified Dealer**
- **Acorn Service Centre**
- **Hotline Support on all Hardware and Software purchased from us**

#### Terms & Conditions

TERMS: UK residents add 17.5% VAT to all prices, except books. Carriage \*FREE on all items in the UK (\*with the exception of "remote" areas). Foreign orders, no VAT, carriage at cost. (quotations available). Access/Visa cards accepted. Dabhand Computing Ltd. is a Qualified Acorn Dealer. Official orders accepted from public sector/education/PLCs, otherwise cash with order. Tender invitations welcome. Callers welcome. We are 2 minutes north of J17, M62. Prices subject to change without notification. Goods offered subject to being unsold.



**DABHAND  
COMPUTING**

DABHAND COMPUTING LTD  
5 Victoria Lane  
Whitefield  
Manchester, M25 6AL

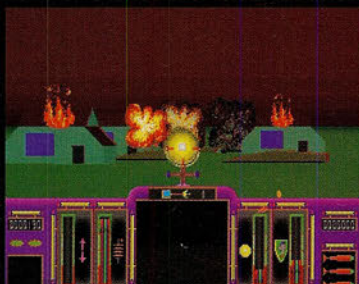
# The NEW Custom McCoy for 1993

Includes 4 BRAND NEW Top Game Additions....

The following Acorn software is compatible with all A3000s, A3010s, A3020s, A4000s, A5000s and ALL Archimedes



ARcticate £25.95



Apocalypse £29.95



ARctist £25.95



The Olympics £19.95



Inertia £19.95

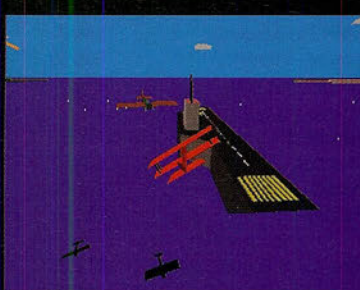
**Choose ANY Four  
Of These 19 Top Products  
For ONLY £34.50!  
Less Than £9 Each!!**



Powerband £25.95



GRIEVOUS BODILY 'ARM £25.95



CHOCKS AWAY Mk2 Version £25.95



Man-At-Arms £19.95



White Magic 1 or 2 £19.95



X-FIRE £25.95



CATACLYSM £25.95



Holed Out £19.95



The Wimp Game £19.95

**Exclusive Mail Order Offer  
For a Limited Period Only**

## Unbeatable Value

The Real McCoy compilations are terrific value for money. Unfortunately if you've already got 1 or 2 of the products you miss out. Now that's all changed. You can choose ANY 4 from these 19 great titles for yourself!! Each such "Custom McCoy" will be individually packaged in 1 attractive video-style box complete with ALL original discs and manuals.

### HOW TO ORDER....

Simply send us a quick letter or give us a ring telling us the 4 products you would like, your name and address, and payment via cheque, postal order or ACCESS or VISA card details.

The Fourth Dimension, 1 Percy Street, Sheffield, S3 8AU.

Tel. (0742) 769950 or 700661.

FREE SAME DAY despatch by 1ST CLASS POST



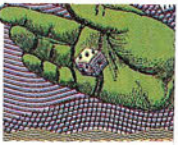
Nevryon £19.95



Arche Soccer £19.95



E-Type £19.95



# GAME SHOW

**A**t last, the New Year lull has died away in the games market and things are beginning to hot up for the spring.

In June, Krisalis Software will be releasing two games: a conversion of the Viking role-playing game that has been a hit on 16-bit machines, *Heimdall*, as revealed last month, and a brand new one from Krisalis' own label called *Soccer Kid*.

That's right, it won't be long until the next World Cup, even though it seems like only yesterday that Gazza bawled his eyes out at the last one, bless him. Billed as a 'cutesie platform game', *Soccer Kid* has been in development for 18 months and features the adventures of the cute Kid and his football.

The Kid has a mission. The Cup itself has broken into six pieces, all of which have been nicked by supporters of various nationalities and taken

## CHEATS OF CHAOS

Here's a handy tip for *Spheres of Chaos* addicts, the asteroids shoot-em-up from Matt Black Software. Liam Corner from Rugby in Warwickshire has written to point out that your firepower can be greatly enhanced by choosing four-player mode and redefining the keys for all players to the same, or alternatively making all four players controlled by the mouse. Bingo! Four ships on screen, whack the fire button and 'don't look now, Mr. Asteroid, but you're about to eat a quadruple stream of lead!'. The only trouble is, it isn't easy to fly around because the ships aren't all pointing in the same direction!



home, meaning the Soccer Kid has to breeze through six countries to build up the Cup and present it to the 1994 World Cup winners in the USA. And that's where the problems start.

In England, the amicable Kid faces trouble from the Great British Rugby Hooligan and, in America, the equivalent; a beefy, brainless American football player who doesn't like soccer kids.

Maniac Italian opera singers, big fat Japanese Sumo wrestlers and even a Brazilian monkey play their part in stopping him at other corners of the globe. (It was going to be a gorilla until somebody pointed out that there are no gorillas in Brazil. 'It is a very big monkey though,' explained the man from Krisalis.)

*Soccer Kid* is being written by Shaun Hollingworth, the author of *Pacmania*, *Swiv* and *Mad Professor Mariarti*.

Sam Greenhill

## THE HACKER

**DoggySoft, 7 Blackhorse Crescent, Amersham, Bucks HP6 6HP  
32-bit machines  
£5.00**

An alternative to *Games Wizard*, the versatile cheating utility reviewed last month, has been released by a firm called DoggySoft. *The Hacker* works in much the same way as *Wizard*, by sneaking its way through the internal workings of a game and rooting out the places in memory where numbers such as 'lives' are stored.

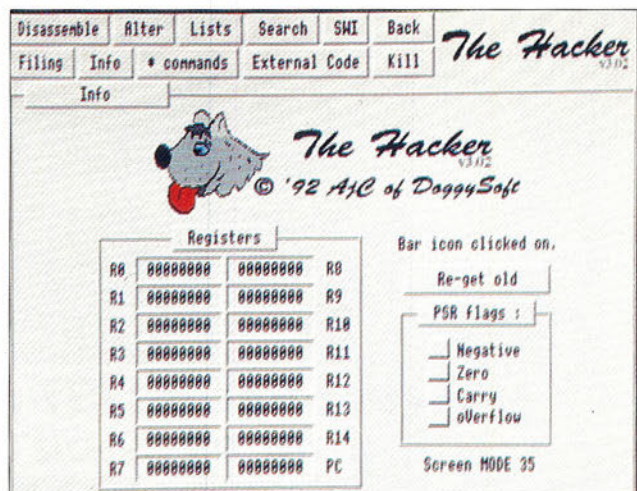
Once that's discovered, any number can be typed in its place to obtain plenty of lives, or, for that matter, extra time, enhanced firepower, loadsa money and even new passwords.

Of the two, *The Hacker* looks a lot sprucer with its 3D

icons and trendy control panels and it is operated by using the mouse, unlike the keyboard menu system employed in *Wizard*. This makes life a lot easier when it comes to running the gauntlet of scanning through memory in search of lives.

Another brownie point for *Hacker* is in the final 'packaging' of cheats. Once you've used a cheating utility to discover which part of the computer's memory you need to alter to get more lives, you want to be able to activate the cheats easily and quickly from the game.

With *Games Wizard*, there is no immediately simple way to do it: you have to pause the game to go into the utility, then 'poke' the lives address in memory with the new value. This process is available as a special script file from the publisher that does all the poking automatically at



**The Hacker turns the most difficult of games into your lapdog**

the press of a hot-key combination. But, with *The Hacker*, this process is included in the software.

The final score? *The Hacker* is by far the most slick, yet it is *Games Wizard* that comes from the professional publisher, Micropower.

Both utilities do the same job but *The Hacker* does a bit more, is also easier to use and only costs a fiver. The problem is the manual, which, clearly, is written by somebody who finds technical jargon interesting.

Maurice Truman

# The Fourth Dimension

## THE 32-bit Acorn Games SPECIALISTS

The following Acorn software is compatible with all A3000s, A3010s, A3020s, A4000s, A5000s and ALL Archimedes



**The Real McCoy 2 £29.95**  
Apocalypse, Holed Out, The Olympics & Inertia



**Galactic Dan £25.95**



**Cyber Chess £49.95**



**Pandora's Box £25.95**  
RISC OS 3 computers require 2Mb



**Break 147 & Superpool £34.95**



**E-Type Compendium £25.95**



**The Real McCoy 3 £29.95** RISC OS 3 computers  
require 2Mb - Powerband, Nevryon, Drop Ship, Wimp Game



### SPECIALIST Acorn Software for all 32-bit RISC Machines

**Special Offer**  
If you buy 2 or more  
products directly from  
us you may deduct £10  
from the total cost.

**How to Order**  
Simply send us a quick letter or give us a ring  
telling us the software you would like, your  
name and address, and payment via cheque,  
postal order or ACCESS or VISA card details.  
Prices include VAT and postage & packing is  
free in the UK. (Overseas add £3 per product).

### SPECIALIST Acorn Software for all 32-bit RISC Machines

The Fourth Dimension, 1 Percy Street, Sheffield, S3 8AU.  
Telephone: (0742) 769950 or 700661.



**Chopper Force £29.95**



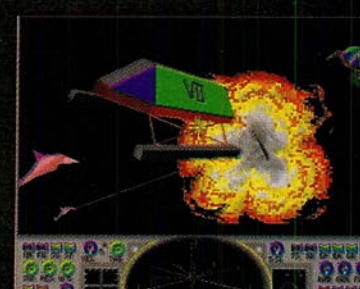
**Enter The Realm £25.95**  
RISC OS 3 computers require 2Mb



**Saloon Cars Extra Courses £19.95**  
Compatible only with DELUXE version



**Chocks Away £25.95** Extra Missions £19.95  
Compendium £39.95 - RISC OS 3 computers require 2Mb



**Black Angel £34.95**



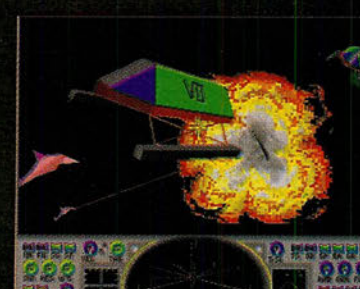
**Break 147 & Superpool £34.95**



**Saloon Cars DELUXE £34.95**



**Holed Out Compendium £25.95**



**Pandora's Box £25.95**  
RISC OS 3 computers require 2Mb



**The Dungeon £34.95** (Hopefully March '93)  
All computers require 2Mb

## BATTLE CHESS

Krisalis  
Tel: (0709) 372290  
32-bit machines  
£TBA

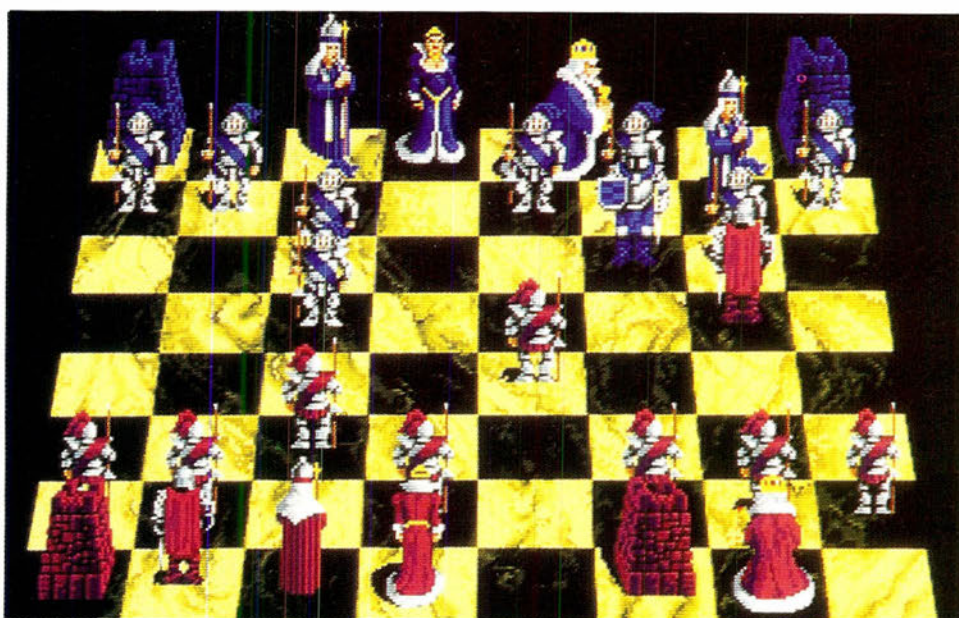
Isn't chess boring? I mean, you sit there, for hours on end, staring hard at a boring two-colour board which has lots of boring pieces that stand perfectly still in the most boring of postures.

The answer? Give each piece a bit of personality, a sense of humour and some in-built vengeance. This is what *Battle Chess* is all about. The board appears fairly normal. But when you decide to move a piece using the mouse, it walks to its new position.

The knights stride, the aging king shuffles and a very elegant queen looks like she's slinking along a catwalk. But the real fun starts when you try to take a piece.

With pawns, we're talking about a straightforward 'baton' fight which lasts for about 10 seconds, but set the knights on each other and the battle gets a bit more meaty and a lot more gory.

In a scene lifted right out of



*Battle Chess* puts the war back in wargaming

Monty Python's *Holy Grail*, the knight's right arm is lopped clean off and lands on the floor. He pauses to ponder this, then continues the fight. Lop. Off goes the other arm. Then, while trying to kick his opponent to death, his leg gets the chop. And so on until he is no more...

Perhaps the funniest is when a pawn gets taken by a piece twice his size. The

bishop – who behaves remarkably like a ninja turtle – snaps the pawn's baton in half, leaving him defenceless; hefty knights just pulverise him, and the king smashes the little pawn's baton away with a big golden mace.

*Battle Chess* can be played by one, two or zero players and it is possible to edit the board, take back moves and all the standard things

expected of a computer chess game. It can also be played in two dimensions but after a while I found the 3D board easy to play on. My only quibble is that each animated move takes ages to load if you only have a floppy disc and there's nothing more boring than staring at a boring board for hours on end, waiting for something to happen...

Sam Greenhill

## DRAGONBALL

TBA Software  
24 Eastgate St., Aberyst-  
wyth, Wales SY23 2AR.  
32-bit machines  
£14.99

Oh dear, I said, when I first realised what this game was. *Breakout*, *Arkanoid*, *Impact*, *Fireball*... the list of bat 'n' ball clones preceding this one is seemingly endless, and for another one to squeeze itself on the scene, it had better be pretty good...

The scenario is straightforward enough: bat, ball, bunch of bricks and an arena slightly smaller than the size of the screen. The objective is to clear the screen of bricks by knocking them out with the ball; there are 100 different arrangements of bricks.

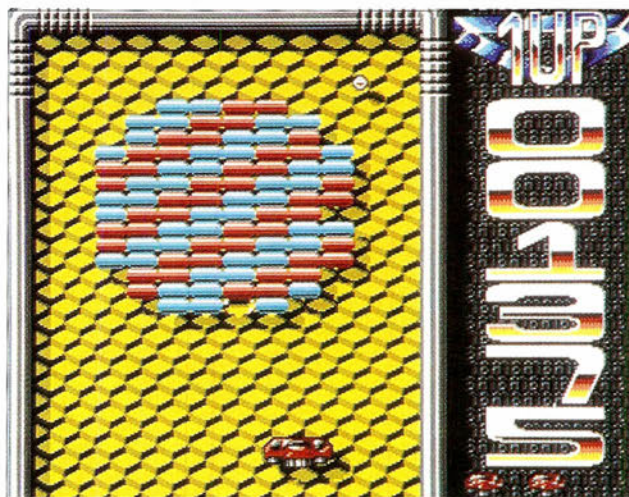
*Dragonball* is the first game from TBA Software, which admits the game is not too original but claims, 'we

have brought it right into the 90s with good graphics, great music, nice sounds and fantastic gameplay.'

There are bonus bricks that send down little power-ups such as the ability to catch and hold the ball, ones that multiply the number of balls on screen and 'bomb' crystals that wipe out the whole set of bricks in an instant. There are even a few pinball-style bumpers that award 50 points whenever they are hit.

But all this is in vain. *Dragonball's* graphics are garish to say the least, painful at worst, and sound is limited to a few twangs and beeps. The ball flies off sideways if hit by the edge of the bat and zooms straight up when hit dead on, but the problem is that there appear to be very few positions in between.

To a newcomer, *Dragonball* is probably a great deal of fun and provides some good entertainment. This is



*Dragonball*: it's all rather familiar

because, in spite of its shortcomings, it takes an addictive formula and puts it into practice reasonably well.

I've seen better and that better is still available, so why should I settle for less? *Fireball 2*, from CIS, is a highly polished bat 'n' ball game with no significant faults that

looks good, feels good and plays well too. It even comes with a screen designer.

So where does that leave *Dragonball*? In the budget box, is one answer. *Dragonball* only costs £14.99 and that is good value for a game of reasonable quality.

Josef Koestler

# SimCity<sup>®</sup>

SAN FRANCISCO

CITY



DISASTERS



BUDGET



DATE  
1990

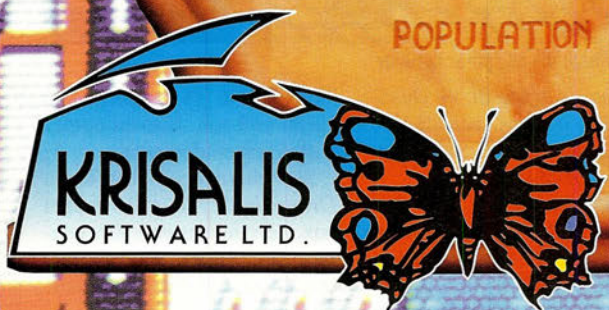


ENERGY

POPULATION



MAXIS



## The City Simulator

# SimCity

- Sold over 300,000 copies worldwide
- Includes maps of famous cities on disk including: Tokyo, San Francisco, Bern, Hamburg, Rio de Janeiro, Detroit and Boston
- Real-time graphics and demo-graphic mapping keep you constantly informed
- Runs in Desk Top and is fully multi-tasking
- Sim City is of great educational value and comes complete with teachers notes

Build your own city from scratch, Bulldoze forests and fields to build roads and zone land for residential, commercial or industrial use. Create industry, power stations, shopping centres, parks, stadiums, seaports and airports. Fight crime, unemployment and pollution. Solve horrendous traffic problems and create rapid transport systems. Control city budgets and population. Confront disasters- floods, earthquakes, fires, tornadoes and nuclear meltdowns, its all in Sim City.

Will you create your own Utopia, or build an industrial nightmare?

## HOW TO ORDER

### LETTER/FAX

SIMPLY SEND A LETTER GIVING DETAILS OF THE GAME(S) YOU WOULD LIKE, YOUR NAME AND ADDRESS, AND PAYMENT BY CHEQUE, POSTAL ORDER, OR BY GIVING YOUR ACCESS OR VISA CARD DETAILS INCLUDING THE EXPIRY DATE.

### IMMEDIATE

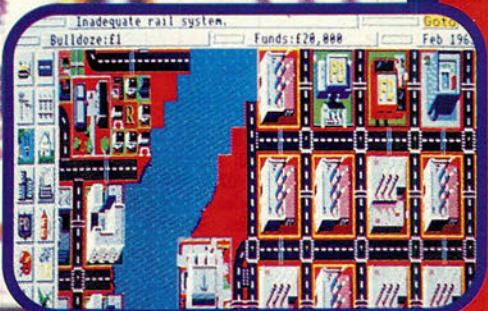
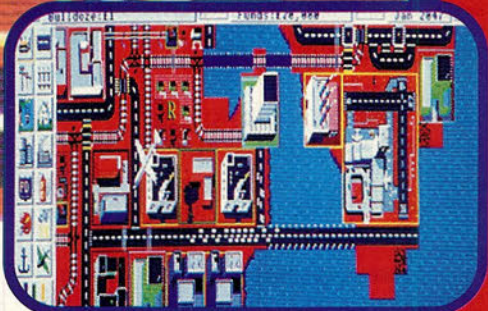
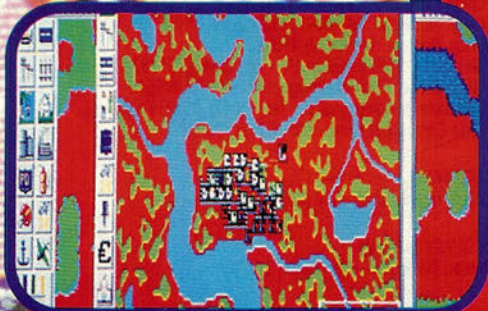
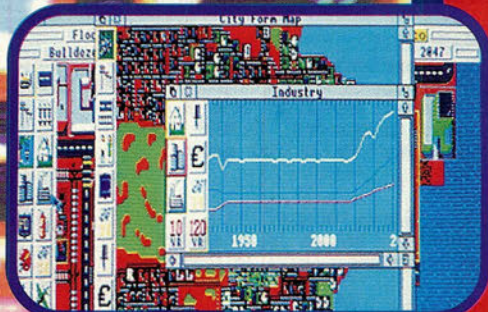
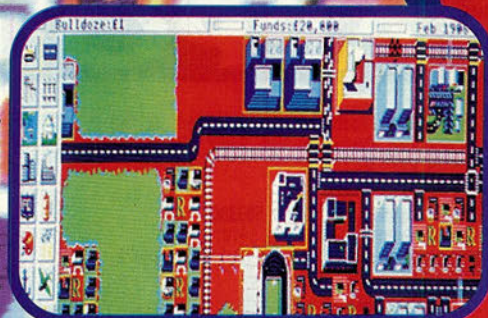
#### DESPATCH

ALL ORDERS ARE DISPATCHED BY FIRST CLASS POST IMMEDIATELY. CARRIAGE IS PAID BY US IN THE UK. (ORDERS FROM OVERSEAS ADD £3 PER PRODUCT).

### FULLY

#### GUARANTEED

IF FOR ANY REASON DISKS SUPPLIED BY US BECOME FAULTY WE WILL REPLACE THEM STRAIGHT AWAY SIMPLY RETURN THEM TO US ENCLOSED YOUR NAME AND ADDRESS.



Available for the first time at the  
**ACORNUSER**  
**SPRING SHOW**  
Harrogate 15th, 16th, 17th April.



**ACORN 32 BIT**  
**£34.99**

# KRISALIS SOFTWARE

## APPOINTED DEALERS

### AVON

Catsoft, Chipping Sodbury, Bristol. Tel: (0454) 321088  
C J Computing, Westbury-on-Trym, Bristol. Tel: (0272) 624553

### BERKSHIRE

Dyad Ltd, Reading. Tel: (0734) 503330  
Microwise, Reading. Tel: (0734) 591816  
The Computer Shop, Maidenhead. Tel: (0628) 36672

### BUCKINGHAMSHIRE

Depson Business Systems, Blechley, Milton Keynes. Tel: (0908) 271500  
Softshop, Chalfont St Peters. Tel: (0753) 889010

### CAMBRIDGESHIRE

AMG Computer Services, Wisbech. Tel: (0945) 474547  
Cambridge Micro, Cherry Hinton, Cambridge. Tel: (0223) 410234  
Daval Electronics, Peterborough. Tel: (0733) 325121  
Microstudio Ltd, Soham Nr Ely. Tel: (0353) 720433  
Newton & Brewer, Ely. Tel: (0353) 666011

### CHESHIRE

3 SL Ltd, Sandbach. Tel: (0270) 761516  
Desktop Projects, Stockport. Tel: 061 474 0778  
Lion Computer Services, Chester. Tel: (0244) 383088

### CLEVELAND

Chips, Middlesbrough. Tel: (0642) 252509  
Chips, Hartlepool. Tel: (0429) 860438  
Chips, Stockton. Tel: (0642) 618256  
Chips, Redcar. Tel: (0642) 488522  
Games H.O., Middlesbrough. Tel: (0642) 595182  
Micro Bridge, Middlesbrough. Tel: (0642) 225518  
Microbyte, Middlesbrough. Tel: (0642) 253414  
Yarm Computers, Yarm. Tel: (0642) 786922

### CORNWALL

Micro Test, Bodmin. Tel: (0208) 73171

### COUNTY DURHAM

Chips, Darlington. Tel: (0325) 381048

### CUMBRIA

Cumbria Software Systems. Tel: (0697) 73779  
Kendal Computers, Kendal. Tel: (0539) 722559  
Microbyte, Carlisle. Tel: (0228) 590755  
Microbyte, Kendal. Tel: (0539) 734285

### DERBYSHIRE

Computer, Glossop. Tel: (0457) 865953  
MCE Computers, Chesterfield. Tel: (0246) 557008  
Microbyte, Derby. Tel: (0332) 200684  
Selective Computer Services, Weston-on Trent. Tel: (0332) 690691  
The Computer Store, Derby. Tel: (0332) 202960

### DEVON

Ambridge Business Systems, Marsh Barton, Exeter. Tel: (0392) 410027  
Minerva Systems, Exeter. Tel: (0392) 410137  
Wants, Plymouth. Tel: (0752) 673211

### DORSET

The Computer Shop, Parkstone, Poole. Tel: (0202) 741258

### ESSEX

AJS, Chelmsford. Tel: (0245) 324588  
Game Limited, Romford. Tel: (0708) 734803  
Game Limited, West Thyrrock. Tel: (0708) 890008  
Skywalker Computers, Southend-on-Sea. Tel: (0702) 601141  
The Business Centre, Southend-on-Sea. Tel: (0702) 339414

### GLOUCESTERSHIRE

AJL Electronics, Gloucester. Tel: (0452) 311031  
Dave Fryer Computers, Gloucester. Tel: (0452) 418479

### HANTS

A & C Computers, Farnborough. Tel: (0252) 375088  
ACM Computers, Alton. Tel: (0420) 541167  
Absolute Business, Southampton. Tel: (0703) 333958  
Fact Systems, Andover. Tel: (0264) 334811  
Game Limited, Southampton. Tel: (0703) 237771

### HERTFORDSHIRE

Beebug, St Albans. Tel: (0272) 40303  
Cannon Computing, Bishops Stortford. Tel: (0279) 730800  
Desk Flair, Hertford. Tel: (0992) 558258  
Game Limited, Hemel Hempstead. Tel: (0442) 233882  
Game Limited, Watford. Tel: (0923) 213494  
Inch Laboratories, Bishops Stortford. Tel: (0279) 718767  
Vipray Computer Supplies, Cheshunt. Tel: (0992) 25640  
Watford Computers, Watford. Tel: (0923) 244398  
Watford Electronics, Watford. Tel: (0923) 237774

### HUMBERSIDE

Microbyte, Grimsby. Tel: (0472) 362515  
Microbyte, Hull. Tel: (0482) 588581

### ISLE OF WIGHT

AV Technology, Newport. Tel: (0983) 522801  
Computer & Games Shop, Newport. Tel: (0983) 812122  
Computer Tutorial Services, Cowes. Tel: (0983) 294333

### JERSEY

Number One Computers, St Helier. Tel: (0534) 77268  
The Computer Shop, Colomberie. Tel: (0534) 601043

### KENT

Chelsfield Publishing, Orpington. Tel: (0689) 838819  
Game Limited, Bromley. Tel: 081 466 0199  
Game Limited, Tunbridge Wells. Tel: (0892) 545326  
The Data Store, Bromley. Tel: 081 460 8991

### LEICESTERSHIRE

DA Computers, Leicester. Tel: (0533) 549407  
Data Next, Leicester. Tel: (0533) 512100

### LANCASHIRE

Microbyte, Preston. Tel: (0772) 882243  
Micro Tech, Bury. Tel: 061 797 6419  
Morecambe Bay Computer Supplies, Lancaster. Tel: (0524) 846886  
Orion Computers, Preston. Tel: (0772) 623000

### LINCOLNSHIRE

Circuitronics, Grantham. Tel: (0476) 72555  
RTS Computer Consultants, Market Rasen. Tel: (0673) 844796

### LONDON

Automatic Services, Walthamstow. Tel: 081 521 1784  
Input Software, City of Westminster. Tel: 071 636 2666  
Microbyte, Liverpool Street Station. Tel: 071 377 1678  
Virgin Games, Oxford Street, London. Tel: 071 637 7911

### MIDDLESEX

JR Letronics, Teddington. Tel: 081 977 8053

### MANCHESTER

Dab Hand, Whitefield. Tel: 061 766 8423  
Microbyte, Manchester. Tel: 061 832 1438  
Mighty Micros, Manchester. Tel: 061 224 8117  
Game Limited, Manchester. Tel: 061 839 5101

### MERSEYSIDE

Ian Copstead, Wirral. Tel: 051 625 1006  
Microbyte, Liverpool. Tel: 051 707 1931

### NORFOLK

Norwich Computer Services, Norwich. Tel: (0603) 766592  
One Stop Computers, Diss. Tel: (0379) 640020

### NORTHAMPTONSHIRE

Kettering Computers, Kettering. Tel: (0536) 410070  
TMJ, Desborough. Tel: (0536) 762713

### NOTTINGHAMSHIRE

Fisher Business Systems, Sutton-in-Ashfield. Tel: (0623) 551992  
Long Eaton Software, Long Eaton. Tel: (0602) 728555  
Mansfield Computers, Mansfield. Tel: (0623) 631202  
Microbyte, Nottingham. Tel: (0602) 586454  
The Computer Store, Mansfield. Tel: (0623) 661214  
The Computer Store, Nottingham. Tel: (0602) 598645

### OXFORDSHIRE

Soft Spot, Banbury. Tel: (0295) 275848

### SOMERSET

Abbey Games (Open 7 Days), Yeovil. Tel: (0935) 23544  
Personal Computing, Yeovil. Tel: (0935) 34061  
Sharbrook Systems, Taunton. Tel: (0823) 322829

### NORTHERN IRELAND

Alpine Software, Portadown. Tel: (0762) 342510

### STAFFORDSHIRE

Fabis Computers, Burton-on-Trent. Tel: (0283) 42824

### SUFFOLK

Lindis International, Halesworth. Tel: (0986) 85476

### SURREY

Calancraft, Byfleet. Tel: (0932) 342137  
Game Limited, Woking. Tel: (0483) 768376

### SUSSEX

CJE Micros, Worthing. Tel: (0903) 213361

### TYNE & WEAR

Game Limited, Newcastle-Upon-Tyne. Tel: 091 230 0239  
HCCS Associates, Gateshead. Tel: 091 487 0760  
Microbyte, Gateshead. Tel: 091 460 2576  
Microbyte, Newcastle-Upon-Tyne. Tel: 091 261 9050  
Microbyte, Sunderland. Tel: 091 565 6196  
Microtyne, Newcastle-Upon-Tyne. Tel: 091 261 4088

### WEST MIDLANDS

Computer Games, Brierley Hill. Tel: (0384) 481262  
Computer Wize Products, Birmingham. Tel: 021 356 9696  
Computer Wize Products, Sutton Coldfield. Tel: 021 382 3252  
Daco Software, Tyseley. Tel: 021 706 8933  
Game Limited, Birmingham. Tel: 021 643 4979  
Game Limited, Coventry. Tel: (0203) 256148  
Mauden Sales, Woollaston. Tel: (0384) 441655  
Mr Disk, Queensway. Tel: 021 616 1102  
Pyramid Computers, Stourbridge. Tel: (0384) 396739

### WILTSHIRE

West Wilts Micro, Trowbridge. Tel: (0225) 762759

### YORKSHIRE

Baker & Hudson, York. Tel: (0904) 623840  
Computers Unlimited, Heckmondwike. Tel: (0924) 402337  
DPM Electronics, Sheffield. Tel: (0742) 611996  
Davyn Computers, Sandal Wakefield. Tel: (0924) 254800  
First Choice Computers, Leeds. Tel: (0532) 319444  
Game Limited, Leeds. Tel: (0532) 465320  
Horsforth Computer Centre, Leeds. Tel: (0532) 590020  
Krisalis Software, Rotherham. Tel: (0709) 372290  
Micro Bridge, York. Tel: (0904) 690617  
Microbyte, Bradford. Tel: (0274) 308829  
Microbyte, Doncaster. Tel: (0302) 329999  
Microbyte, Leeds. Tel: (0532) 450529  
Microbyte, Sheffield. Tel: (0742) 568537  
Microbyte, Wakefield. Tel: (0924) 201077  
The Computer Store, Barnsley. Tel: (0226) 284124  
The Computer Store, Bradford. Tel: (0274) 732094  
The Computer Store, Doncaster. Tel: (0302) 325260  
The Computer Store, Halifax. Tel: (0422) 369077  
The Computer Store, Huddersfield. Tel: (0484) 514405  
The Computer Store, Leeds. Tel: (0532) 429284  
The Computer Store, Scunthorpe. Tel: (0724) 857985  
The Computer Store, Meadowhall, Sheffield. Tel: (0742) 569121  
The Computer Store, Pinstone Street, Sheffield. Tel: (0742) 780083  
The Computer Store, Wakefield. Tel: (0924) 290159  
The Computer Store, York. Tel: (0904) 646934

### SCOTLAND

Comcal, Ayr. Tel: (0292) 670716  
Computer Depot, Edinburgh. Tel: 031 668 4146  
Computer Depot, Glasgow. Tel: 041 332 3944  
Games Limited, Aberdeen. Tel: (0224) 211102  
Liquid Silicon, Kirkcaldy. Tel: (0592) 260512  
Moray Business, Elgin. Tel: (0343) 552000  
Virgin Megastore, Glasgow. Tel: 041 221 2606  
Zomcal, Glasgow. Tel: 041 332 5147

### WALES

Armtech (UK) Limited, Holywell. Tel: (0352) 715840  
The Computer Store, Camarthen. Tel: (0267) 221661  
Uniqueway, Cardiff. Tel: (0222) 615782  
Virgin Megastore, Cardiff. Tel: (0222) 388273

### EIRE

Lendac Datasystems, Dublin. Tel: 010 3531776133



Dealers if you would like your retail outlet included in future Krisalis  
Software dealer list advertisements please contact us on 0709 372290.  
Produced in conjunction with Greyhound Marketing, Tel: 0532 621111.

**GREYHOUND**  
MARKETING LIMITED

# NEXT MONTH

**BBC**  
**ACORN USER**

## SPRING FEVER IN THE ACORN WORLD

In April, a host of new products will be revealed to a discerning public at the BBC Acorn User show.

But what happens behind the scenes: how do companies plan their next product releases and what are the most eagerly-awaited new launches?

We delve behind the scenes to investigate the springtime boom

### THE EXTERMINATOR

*Acorn User* whisks you away to planet Skaro and explains how to create a head-rotating, exterminating, human-hating dalek

### CLASSIC CORNER

Whatever happened to great games like *Pong*, *Space Invaders* and *Asteroids*? Soak up some nostalgia with our remix of the golden age and play our exclusive version of *Pong*

### DON'T MISS

your issue of BAU,  
on sale the  
second Thursday of  
every month

**PLUS**

## THE BUYERS GUIDE

We look at a flood of new releases in a special review-packed issue . . .

### SERENADE MUSIC

Extend your musical repertoire with *Serenade*, a complete Midi sequencer

### KODAK CD

As Kodak prepares to take the high street by storm, what lies in store for CD users?

### MASTERFILE 3

We give Risc Developments' latest foray into the battle of the databases a long hard look. Will it knock the opposition for six?

### IN BRIEF

Organisation using the new *Almanac*, sneak previews of *ProArtisan 2* and *Knowledge Organiser 2*, the speaking version of *StartWrite* and more

### MODEM ROUNDUP

If speed is your need, just take a look at the latest modem technology

To be sure of your copy, please fill in the coupon below and hand it to your newsagent. Or why not take out a subscription, which includes a free monthly disc. See page 18 for details

DEAR NEWSAGENT, PLEASE ORDER MY REGULAR COPY OF BBC ACORN USER

AUH

YOUR NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

BBC Acorn User is published by Redwood Publishing, 101 Bayham Street, London NW1 0AG.  
Distributed by BBC Frontline, Park House, 117 Park Road, Peterborough

# THE ColourCard

FOR THE ARCHIMEDES

MORE RESOLUTION  
MORE COLOURS  
MORE SPEED  
LESS FLICKER



HATS OFF TO COLOURCARD



A new graphics accelerator card for the Archimedes, the ColourCard brings a host of improvements to the video capabilities of any Archimedes A300\*, 400\*, 540 or 5000 series computer.

The simple to fit, single width expansion card is completely compatible with all RISC OS desktop software, but brings much higher screen resolutions at higher screen refresh rates (less flicker and easier on the eye).

In 16 and 256 colour screen modes all the colours are selectable from 16 million hues. This means scanned pictures can be seen with 256 true grey-levels on screen and that you are no longer restricted to the preset Acorn palette. Some applications, such as ArtWorks, can provide better screen colouring using the new palettes.

In addition, the ColourCard offers 15 bit-per-pixel true colour screen modes having over 32,000 colours on screen at once. Although these screen modes are not yet desktop software compatible, it is expected that programs will become available that take advantage of the modes. The ColourCard is supplied with a 24-bit preview utility to show 24-bit Clear files in stunning full colour.

The ColourCard reduces the load on the main Archimedes memory and so allows the ARM processor to run much faster than would normally be possible in high resolution screen modes. Depending on machine and screen mode, graphic operations can be up to twice as fast.

The ColourCard revolutionises DTP and graphics work, and opens up the world of true-colour graphics to the Archimedes user for the first time.

The ColourCard has been developed and is backed by

## KEY COLOURCARD FEATURES:

- ArtWorks version 1.1 now supports 32,000 ColourCard screen modes
- Video pass through for guaranteed compatibility with all software without having to unplug your monitor
- 15 bpp (ie 32,000 colour) screen modes
- No quibble money back guarantee
- A3000 version now available
- New configurable screen update speed

(The ColourCard is compatible with all multi-scanning monitors. †Only higher scanning rate monitors can manage 1152 x 848 resolution. Lower scanning rate monitors may display some resolutions at lower refresh rates. \*A300 and early A400 computers may need an additional Genlock connector to be fitted internally.)

Price £249.00 +£6 p&p + vat (£299.62 inc)  
Available from all good dealers and from:



15 Witney Way, Bolden Business Park,  
Bolden Colliery, Tyne & Wear, NE35 9PE  
Tel: 091 519 1455 Fax: 091 510 1929



Computer Concepts Ltd  
Gaddesden Place, Hemel Hempstead,  
Herts, HP2 6EX  
Tel: 0442 63933 Fax: 0442 231632

E&EO Details are subject to change without notice.

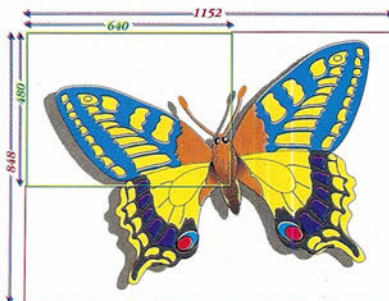
16 colours

256 colours

32,000 colours

## SOME OF THE SUPPORTED SCREEN RESOLUTIONS

1600 x 600	65Hz
1024 x 768	72Hz
1152 x 848	64Hz <sup>†</sup>
1280 x 512	80Hz
800 x 600	85Hz
1152 x 424	80Hz
800 x 300	80Hz
576 x 424	90Hz



ColourCard offers 3 times the pixel area of standard Acorn VGA mode 27.

the largest and most successful Archimedes developer. It is available now, and for added peace of mind comes with a 14-day, no quibble money back guarantee.

# QUESTIONS

## AND

# ANSWERS

**Q** I am thinking of buying either an A3020 – with hard disc – or an A4000.

Which is better for home use? I am interested in playing games, programming in Basic and assembler, sound sampling, using art packages, DTP and so on.

A. Martin  
Cardiff

**A** Differences between the baseline A4000 and the A3020HD are all fairly minor. The A4000 has an 80Mb hard disc rather than the 60Mb on the 3020, comes with a remote keyboard and costs fifty quid more.

It's probably healthier to sit as far away from the screen as you can and you can never have enough hard disc space, so I reckon this is £50 well spent. If you're planning to get seriously into memory intensive applications like DTP and art, I would recommend that you install the full 4Mb of Ram. If you do this when you buy the computer, your dealer may agree to throw in the upgrade for a cheaper price.

**Q** I recently purchased an A3000, but for five years I have been working on an Acorn Electron, so I have a large amount of software on tape that I would like to transfer to disc for my new machine.

Is there any way to do this? The \*TAPE command is useable, but there is no tape socket available.

Ben Gibbard  
Bridgnorth

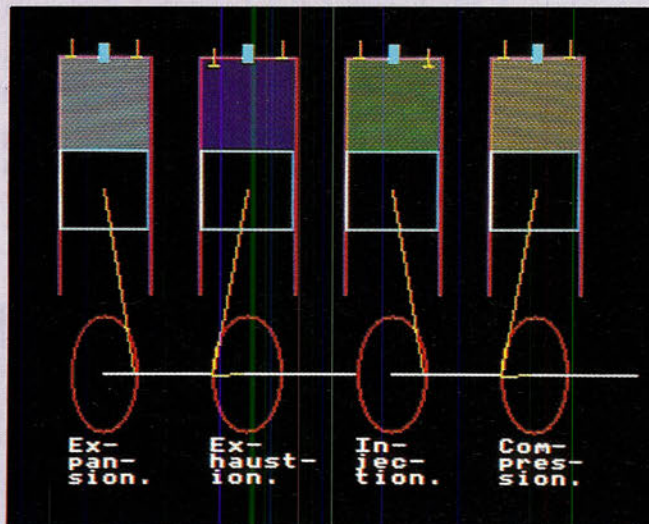
**A** Although the 6502 emulator provides the \*TAPE command, this is only there for consistency with the original BBC B operating system and doesn't actually do any of the file handling itself.

The reason for this is that many early Beeb programmers used \*TAPE as a cute way of liberating a couple of K of storage from the DFS while the disc drive wasn't doing anything.

What you need is to locate someone with a Master and 3.5in disc drive who can help you to transfer your files

**Q** I would like to buy some software that displays the workings of two and four stroke petrol and diesel engines but haven't been able to find anything. The Archimedes must be capable of superlative demonstration accompanied by realistic sounds: the Navyron game already displays convincing cut-away views of pistons moving in cylinders. Could you point out something suitable?

A.H. Evans  
Leeds



**A** The only commercial package I know of is sold by AVP, tel: (0291) 625439, called the *The Four-Stroke Engine*. This is available for all Acorn computers and includes animation of a single cylinder four-stroke cycle. It also features a model of a four-cylinder, in-line, overhead camshaft engine that allows users to see what's happening in all four cylinders at once. These illustrations demonstrate the principles clearly but are obviously derived from an earlier BBC version of the software, and do not make full use of the Archimedes' graphic or sound capabilities.

A simple program along these lines is *Motor* (shown above), featured on our £7.95 \*INFO compilation disc. Call (0937) 842489 for more details.

over to your new machine. Perhaps a school or computer club in your area could help you out.

**Q** I am using a 4Mb A420/1 with Risc OS 3 on which I create *Impression* documents of up to 15 pages containing a lot of graphics, mostly from *Draw*. Printing these to dot matrix takes an average of five to six minutes per page, and on

a Hewlett Packard Laserjet 2 about four minutes per page, but my problem is the time taken to compose the document.

Printing such a document to file first is of no great advantage, as it still takes a very long time to compose the pages and I cannot use my computer while this is going on. I also have to set the printer driver to print to file

and then reset it to send the output file to the printer; a step I usually forget. The time saved, if any, is not worth the bother. In any case, longer documents would require too much memory to print to file.

What I really want is a printer driver that composes a page at a time and then sends it to the printer; all in background. Do such drivers exist and do they make everything run unbearably slowly? Would an external printer buffer help and how big would it have to be? Should I fit an Arm3 chip?

John Martin  
Accra

**A** There are two processes at work here. In the first, called 'composition', the DTP program analyses the objects laid out on its pages and converts the resulting graphical image into codes that can be understood by the printer driver.

In the second, 'printing', the program directs that stream of bits to the printer driver which modifies the codes to suit your printer, and then sends them.

Composition is internal to the DTP program and no printer driver on earth will change it. It is a long process, but turning many text and graphics objects into a stream of several hundred dots per inch, accurate to better than a millimetre, consumes rather a lot of processor time.

Commercial Unix-based publishing systems do have the power to 'compose in background' but nothing on the Arc has this capability. To speed up this part of the proceedings you will need to install an Arm3.

When printing, the program talks to the outside world and how fast it does this depends on what it's talking to. In 'background printing', the data is first 'spooled' to a file in Ram disc. The simple matter of moving data from one chunk of memory to another eliminates waiting for the physical operation of the printer.

Once the output file has been created and dropped on to the printer driver icon,

actual printing takes place without depriving you of control. 'Background printing', in effect, turns some of your Arc's memory into an 'internal' printer buffer.

Some time is added by switching the driver between disc and printer but, compared to the time taken to print at 200 or more dots per inch on a dot-matrix, I'm surprised you find it 'of no great advantage'.

External buffering would speed things up initially by cutting out the time taken saving and switching the printer driver but, unless the buffer is as big as your typical output file, it will soon fill up, so causing a bottleneck later on.

Given the size of file that you use, an external buffer for your dot matrix printer would be very expensive. At £50 per Mb, however, it may serve you better to buy some more Ram for your Laserjet.

**Q** I have a BBC Master with a Star LC-200 nine-pin colour printer, and would like to get hold of a printer dump program that will output the screen's contents in colour.



ESM's Rom can cope with nine-pin colour or the Integrex Colourjet shown

I made an attempt at writing a Mode 2 colour dump, but it's woefully slow. Can you help?

Dan Jackson  
Peterlee

**A** Try the Colour Screen-print Rom from ESM; (0223) 65445. This comes in three versions, one for nine-pin colour like the LC200; one for 24-pin printers; and one for inkjets like the Integrex Colourjet.

**Q** I am doing a computing course that involves programming in Comal. Is there a Comal compiler I could use to work on my A3000 at home?

Andrew Gillespie  
Dumbarton

**A** I don't know of a Comal compiler that runs in the 'native' Risc OS environment, but there is a PC product called *UniCOMAL* that will run under DOS

emulation. The distributor is MacharSoft: (0671) 3441.

## UPDATE

OK, mea culpa; I did it! In February's *BAU*, I answered a question about transferring graphics files between PCs and the Arc. I recommended John Kortink's excellent shareware packages for converting sprites to and from Tiff and Giff formats. I then said I didn't know of a program that would do the same job for Windows .BMP files.

As soon as the issue hit the newsstands, I started getting letters telling me that recent versions of *Translator* and *Creator* do, in fact, handle Windows bitmaps. My apologies to John for not being more up to date on his program and my thanks to Geoff Arnold of Tadworth and Graham Hick of Oxford for gently pointing this out. *Translator* and *Creator* are available from most public domain distributors.

Thanks also to readers who wrote in with help and manuals on the Panos 32016 operating system for I. Barr (January Q&A). Your letters have been sent on.

## CUSTOMER HOT LINE



Every month in *BAU*, Alan Glover from the Acorn customer service department offers you Acorn's advice and support

### HOTLINE: RISC OS 3

This month we concentrate on Risc OS 3, and on some of the problems that may be experienced when upgrading from Risc OS 2 (or using Risc OS 3 and Risc OS 2 in the same environment). The Release Note supplied with Risc OS 3 contains a number of important hints; please take the time to read it through and note anything applicable to your environment.

### POINTS TO REMEMBER WITH DOS PARTITIONS

- When you finish using a floppy disc that contains a DOS partition file, you should dismount the disc before removing it to ensure that any buffered data is written to the disc. This is also a good practice to maintain in normal use, since it will ensure that the computer does not ask for any discs that you have finished with. If buffered data has not been written to the disc it is possible that the file may be corrupted because the last part of the file may still be in the computer's buffer rather than on the disc.

- The setting of the Truncate option can cause unexpected behaviour. If the Truncate option is turned on, and files are being copied from a ten character filename filing system – such as ADFS – to a DOS partition – with eight character filenames and a three character extension – the name will be truncated to eight characters. This can result in the accidental overwriting of files whose first eight characters of the filename are identical.

The alternative is to have the Truncate option turned off, in which case an error will be produced whenever a copy operation which would result in name truncation is attempted.

### MORE RISC OS 3 HINTS

- **Fonts:** The *!Fonts* directory under Risc OS 3 differs from the Risc OS 2 one since it now provides support for multiple font directories and fonts in Rom.

If you wish to transfer fonts from a Risc OS 2 *!Fonts* directory to a Risc OS 3 one you should open both using SHIFT-Double Click-Select and then copy the individual font directories from the Risc OS 2 one to the Risc OS 3 one.

You do not need to copy the additional files from inside the Risc OS 2 *!Fonts* directory to Risc OS 3 since the Outline Font Manager and associated modules are already provided in the Risc OS 3 Rom. Since Corpus, Homerton and Trinity are already present in the Risc OS 3 Rom there is no need to copy these into a Risc OS 3 *!Fonts* directory.

Should you find that you lose access to the Risc OS 3 Rom fonts – Corpus, Homerton and Trinity – it is likely that you have come into contact with a Risc OS 2 *!Fonts* directory.

- **Risc OS 2 and Risc OS 3:** In some situations it is common to use a start-up disc to load regularly needed modules, applications and so on. Separate discs should be used for Risc OS 2 and Risc OS 3 systems, since the modules which need to be loaded differ significantly between the two; Risc OS 3 already contains most of the modules which you would need to add to a Risc OS 2 system.

In particular, the *!Fonts* directory on the start-up disc must be the correct one for the version of Risc OS in use.

# SOFTWARE SHOWCASE

## EDUCATION

### SSERC SOFT 93 Software for Serious Science

**SSERC GRAPHICS LIBRARIES & Technology**  
FOR DRAW, DTP, VECTOR, ARTWORKS, MAGPIE, NOOT etc  
15 discs now available. £10.50 per disc + vat.

Buy 5 or more discs - free SITE LICENCES on all  
Chemistry, Interfacing, Technology, Techno, 2, Techno, 3,  
Physics, Electronics, Utilities, Update, 1, Alpha Boards,  
Cell Biology, Body Bits, Molecules, 1, Molecules, 2, E&L Boards  
Send for FULL DETAILS of all discs before deciding.  
Don't re-invent the graphics wheel. Find out TODAY  
how the GRAPHICS LIBRARIES can help you.  
Used in hundreds of schools in the UK and overseas.

**SSERC IDRAW PRACTICAL GUIDES** - £12.60 + vat  
100 pp, A4 manual + 2 discs of exercises (compressed)  
Archimedes World Oct. '92 says "...gets nothing less  
than a wholehearted recommendation. Worth every penny."

**SSERC CHEMICAL MODELLER (version 3)** - £52.50 + vat  
Build & display chemical structures with ease. Package  
includes Teacher & Pupil Guides. GET INFO NOW!  
DISPLAY - ball+stick, spacefill, Van der Waals, stick,  
red/green stereo 3D, atom numbers & names, dot surface.  
MANIPULATE - rotate in any plane, rock, translate, zoom  
in or out, best view, progressively reveal hidden detail.  
INVESTIGATE - bond angles/lengths, E minimise etc etc.

**PLEASE MAKE CHEQUES PAYABLE TO "SSERC"**  
SSERC, 24 Bernard Terrace, Edinburgh EH8 9NX  
Tel. 031 668 4421 for more information  
or send a stamped (£1 please) self-addressed envelope

Educational Software For  
Acorn RISC OS Computers

**PORTERS**  
PRIMARY  
SOFTWARE

### Primary Collection

22 tried and tested programs designed to develop a range of  
basic reading and mathematical skills. An ideal start for children  
from the age of 3 years upwards.

**£8.50**

Cheques payable to P. Porter

Porters Primary Software  
138A Harvey Clough Road  
SHEFFIELD, S8 8PG

Other packages include:  
Infant Windows £24.50  
Junior Windows £24.50  
Turtle £34.50

See us at the Acorn User Spring Show 93 on **stand 70**



### New Titles Available Now!

**ROUND THE WORLD YACHT RACE (9-13yrs)**  
Maths, Geography package — Take the helm and  
plan the route, provision the yacht and choose  
spare equipment before sailing. **£34.99**

#### SMUDGE THE SPANIEL (4-8yrs)

The essential graded learning maths program —  
recognition, counting, addition, subtraction. 2x.  
5x and 10x tables. Writing numbers. Dot to Dot.  
Colour and Count. 23 pictures, musical  
soundtrack, sampled barks and a font for  
children. **£25.99**

Write or call for a brochure:

**STORM EDUCATIONAL SOFTWARE**  
FREEPOST, Sherborne, Dorset DT9 4BR  
☎ 0935 817699

### !LogiSim

DIGITAL  
LOGIC  
SIMULATOR

!LogiSim enables the user to design simple logic circuits  
and then see them working, on screen.

Upto 25 devices on screen, 11 different device types,  
including AND, OR, NAND, NOR, XOR, NOT,  
JK flip flop, Counter & Clock etc.

!LogiSim does not multi task..... Yet.  
Established users will get discounted upgrades.

Cheques payable to RMD  
12 PADSTOW ROAD  
GREASBY, WIRRAL,  
MERSEYSIDE.  
L49 3AQ

£10 inc. P&P  
Demo Version £2

Developed with Silicon Vision RiscBASIC

## EDUCATION

### New! for the A3000 to A5000 NUMBER ZOO

A first number program.

Features 4 early skill games,  
plus a matching pairs game.

Excellent value. Only £16.45 incl.



Selective Software  
64 Brooks Road  
STREET, BA16 0PP  
Tel (0458) 43079

## STATISTICS

### STATISTICS FIRST

IS NOW  
MULTI-TASKING!

Our new enhanced products

**1st and 1stJR**

Have been released

For full information  
contact

Serious Statistical Software  
Lynwood Benty Heath Lane Willaston  
South Wirral L64 1SD

Tel: 051 327 4268

## DATABASES



Astoundingly easy to use!  
Acorn Computing Dec. 92

### IMPACT!

The Database

A new easy to use database with  
direct Impression links

Impact! offers easy to use yet  
powerful features for home  
or school, at a sensible price.

If you use Impression,  
you need Impact!

Circle Software

Phone today  
**£49.95 + vat**

33, Restrop View  
Purton, Swindon  
SN5 9DG  
Tel: (0793) 770021



## EDUCATION

**Fun & Games**

**3 Games NEW!**

**£22.95**

A3000,  
A5000 &  
Archimedes

"T.V. Fun & Games" - 3 National  
Curriculum games for ages 5 to 9

HS SOFTWARE, FREEPOST, SWANSEA  
SA2 9ZZ. TEL: (0792) 204519

### Banner

Banner is a RISC OS signwriting application for  
printing large wide banners quickly and easily.

- Full control of text, background, border & shadow colour
- Drop shadow in four directions plus many different border styles
- Imports Draw files and Sprites
- Uses standard RISC OS outline fonts
- The banner length is not limited by page size and may be set to print continuously

Kudlian Soft, 8 Barrow Road, Kenilworth  
Warwickshire, CV8 1EH Tel: 0926 - 851147

£23.50 inc. VAT

(Site licences also available)

**Kudlian**  
Soft

## MAGAZINES

### VIRTUALITY

### DEMO CODING FRACTALS

BASIC, ARM CODE, NEWS,  
GAMES, REVIEWS, RISC OS 3,  
& MUCH MUCH MORE...



**CURRENT ISSUE £2.50**

1 The Square, Woolavington,  
Bridgwater, Somerset, TA7 8DL.

### Illusions

Illusions is the best disk magazine that caters for the  
whole range of Acorn users. The latest issue contains  
over 30 articles on: Wimp, ARM, Basic and Impression  
Tutorials, the latest software/games reviews, news etc...

Subscriptions: 1 month - £3.00  
6 months - £9.00  
12 months - £15.00 (one issue free)

Illusions consists of 3 disks, an articles disk + 2 disks of  
the latest and greatest Public Domain Software.

20 College Road, Wembley, Middx, HA9 8RL.

# SOFTWARE SHOWCASE

## PUBLIC DOMAIN

650 discs of great software  
for all RISC OS 2 & 3  
computers for only  
£1.25 per disc!  
Pick 'n' Mix  
for £1.65.

**Arch Angel**  
The PD Library



This was me, before I  
discovered the Arch  
Angel PD Library!  
I was ready to give up  
buying PD ever again.

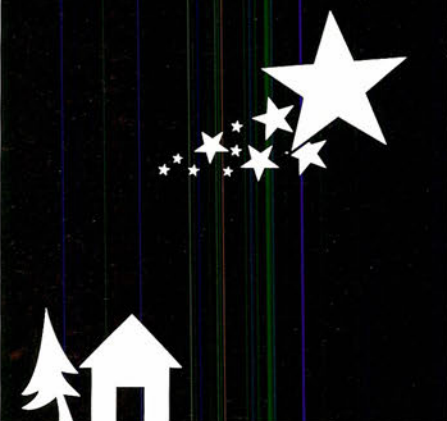


And this is me, 6  
weeks later, I feel  
much more confident  
with my Archimedes.

Send £1 for catalogue disc to:  
Arch Angel PD, PO Box 41, Exeter, EX4 3EN.  
Enquiries (0392)-422759

## PUBLIC DOMAIN

**SKYFALL PD**



Send £1 for Catalogue & Disc to:  
PO Box 2220, B'ham, B43 5RZ.  
Enquiries: 021 358 7078.

## GAMES



Deep in space the forces of Chaos are unleashing a new  
terror. Seemingly harmless spheres which destroy  
everything in their path float ever closer to your space ship.  
Only you can prevent them from causing untold destruction.  
Will you survive against swarms of intelligent Chaos  
creatures?

### Technical Features

- > 1-4 simultaneous players
- > 50 frames per second animation
- > Spectacular particle explosions
- > Intelligent enemy ships
- > Many different power-ups to collect
- > Control by mouse, keyboard or joystick
- > Difficulty control
- > Customisable game features
- > Players team-up or battle each other

"...the visual effect is quite stunning, just like a fireworks  
display...Spheres of Chaos is very addictive and can keep you up all  
night." - Acorn User

Only £24.99 from MATT BLACK, Dept. AU3, P.O. Box 42,  
Peterborough, PE1 2TZ Telephone 0733 315439

**FIVE STAR MARKETING**

For: Demos, clipart, games, utilities, trackers, etc.  
All sprite files are compressed with ArkFs2.  
All discs are checked for virus' & duplications.  
No minimum order of discs.  
Quantity and subscriber discounts.  
Send for our latest catalogue/demo disc which  
has over 1.3 Meg. of software for just a £1 coin.  
Send this ad. with your first order for an  
additional 5% off our price list.

**Five Star Marketing, 18 Woburn Close,  
Bushey, Herts. WD2 3XA.**

Send £1.00  
for a copy of our  
latest catalogue disc  
featuring many special offers  
OR  
Send £1.50 for our latest catalogue and an  
extra disc with around 1600k of  
compressed P.D.

**THE CATASTREAM**

Why pay more than you have to for Public  
Domain software? We charge £1.00 for  
Normal Discs and only £1.50 for Pic'n'Mix  
discs. We don't charge any extra for P & P!

**The Number One Name In Public Domain!!**

34 Norbreck Close, Great Sankey,  
Warrington, Cheshire,  
WA5 2SX

**Special Spring Sale**

CREATOR ARCADE  
GAMES DESIGNER  
RRP £38.95  
Sale Price £33.95 - Save £5

ALPS ADVENTURE  
SYSTEM  
RRP £34.95  
Sale Price £29.95 - Save £5

CYBORG RRP £25.95, Sale Price £22.95 - Save £3  
Offers end 30/4/93. Mention 'BAUS' when ordering.

Please add £1.00 P+P per order. EC: £2.50, Outside EC: £4.50

**ALPINE SOFTWARE, (BAUS), Tel/Fax: 0762 342510  
PO BOX 25, Portadown, CRAIGAVON, BT63 5UT**

**ARCAYNIA**

**New and Exclusive  
Digital Symphonies**

Arcaynia now stocks the first 10 discs of  
official Digital Symphonies. These now  
replace Trackers as previously stocked,  
due to the vastly superior quality.

Many of these tracks are converted  
from OctaMED, so have never been  
heard on a Risc Machine before.

You can order the entire pack of 10 for just £12.00,  
or individually £1.50 each as \$01-\$10. (Min 2 discs)

Send a £1 coin to receive our full catalogue  
for all 32 bit Acorn machines, along with  
Demonstration Disc No. 13.

PO Box 1927 : Sutton Coldfield : B74 3QZ

## FONTS

**NEW FONTS**

The ongoing saga of the  
amazingly affordable fonts  
Only £4 each (Foundation:£8)

This is LucidMedium  
**THIS IS MAIRO OPEN**  
This is Foundation.Bold

Design Concept  
30 South Oswald Road  
Edinburgh EH9 2HG  
031 668 2000

£2 postage on all orders.  
Call for our free catalogue

## CHEATS

**DoggySoft**

Presents the Original and  
best Arc games hacker

A snip at  
£5 **The Hacker**

The Hacker was the first games hacker for the  
Archimedes, and is now in version 3.03 - it is a  
sophisticated cheat program with many features  
not available in any other similar program. It also  
runs in a user-friendly graphical user interface  
based on the RISC OS Desktop, making it easy to  
learn and use. The Hacker is compatible with all  
Acorn 32-bit computers with more than 1Mb of  
RAM, and costs an incredibly small £5. If you need  
proof that The Hacker is the better program, send  
50p or a blank disc.

Stop the game at any point by pressing both Alt keys,  
and find extra and infinite lives, time, fish, etc., using  
The Hacker's flexible and often unique features. Slow  
down the game, save out screen-shots, execute star  
commands and SWIs, trap SWIs, kill the game to go  
back to the Desktop, save the game to continue later,  
rip music, and much more, easily, with the easy to use  
interface. Then, once you've found how to cheat, you  
can create a game-specific CheatMod which stands  
alone and can be distributed as you wish.

**DoggySoft, 7 Blackhorse Crescent, Amersham, Bucks., HP6 6HP.**  
Cheques payable to Andrew Clover

# SOFTWARE SHOWCASE

## NETWORKING SOFTWARE

### **!NetView** £34.99 (Edu. £29.99) all inclusive

- ✓ View BBCs, Masters and Archimedes on Econet!
- ✓ Multitasking equivalent of "Stations allowing easy selection of station to view."
- ✓ Powerful Notify facility: GS (ie. like "Echo") strings or even whole text files!
- ✓ Save viewed screens or text (for Text-Modes). Password facility. RISC OS Compliant. 10 Station Licence.
- ✓ AUN Compatible version now available!
- ✓ Teachers can now spy on those naughty pupils!

"It should be a boon for teachers and net managers everywhere." - *Acorn User*, February 1993.

From: Sanjay Pattni, Flat 11, 86 Ifield Road, London SW10 9AD. ☎ 071-351 6192.

## SUPPLIES

### FREE MAIL ORDER COMPUTER SUPPLIES CATALOGUE

**FIRST ISSUE BARGAINS**  
Software - Ribbons - Printers  
Accessories - Discs - Paper  
Complete Systems  
NO MINIMUM ORDER  
Write or phone NOW ...

exclusive to:

ARCHIMEDES - BBC  
MASTER - COMPACT  
Users

**Dixon & Dixon**  
Mail Order Dept. AU3  
35 Rokeby Drive  
Kenton  
Newcastle Upon Tyne  
NE3 4JY  
Tel or Fax 091 2853042

## UTILITIES

### **KEYLINK PROLOG V2.1** For all RISC OS machines

- Standard Edinburgh syntax with integer & real arithmetic.
- 140 page manual developed for the first time Prolog user.
- RISCOS compliant.
- Execution tracing and configurable exception handling.
- Suitable for use with large Prolog programs such as the Open University's Micro Interpreter for Knowledge Engineering.
- Widely used for Scottish Standard and Higher grades.

£69.95 + VAT (postage included). Site licences available.

Keylink Computers Ltd, 2 Woodway House, Common Lane, Kenilworth CV8 2ES Tel: 0926 50909 Fax: 0926 864128

## SPECIAL NEEDS

### **C.J. COMPUTING SPECIAL NEEDS**

**SALES • REPAIRS • SPECIAL NEEDS**  
Please contact us for all your Acorn computers (Hardware & Peripherals)

We specialise in tailoring computer systems for

Approved  
ACORN  
Dealer

**57 Westbury Hill,  
Westbury-on-Trym,  
Bristol  
Tel: (0272) 624553**

## DISCOUNT SOFTWARE

# ET

# Software

8 Old Gate Avenue  
Wotton on Trent  
Derbyshire  
DE72 2BQ

Discount Software - prices inclusive of postage and packing etc.

Artiforia	150.00	Black Angel	30.00
Compression	39.00	Break 147 and Superpool	30.00
Eureka	120.00	Chocks Away Compendium	34.00
Impression II	145.00	EGO: Repton 4	22.00
Impression Junior	80.00	Gods	22.00
Oration	95.00	James Pond	22.00
Pendown+	79.00	Lemmings	22.00
Pipedream 4	196.00	Lotus Turbo Challenge	22.00
Revelation II	122.00	Oh no! More Lemmings	17.00
smArt	54.00	Populous	26.00
smArt files	17.00	Saloon Cars Deluxe	30.00
Vector	86.00	FunSchool 2 18.00 FunSchool 3/4 21.00	

Cheques/ Postal Orders Payable to ET Software - Send SAE for full list. (E20E)

Cheques/ Postal Orders Payable to ET Software - Send SAE for full list. (E&OE)

## COMMERCIAL SOFTWARE

### **Archimedes Commercial Titles**

Dave Pilling, Clare's, Colton, Serial Port, EFF, and many many more.

Public Domain

100's of PD Titles, Clip-Art, Trackers, and Samples.

Send a disc and a stamp and we will send you back your disc with FREE PD and our catalogue, or phone until 8pm each night!

**Bits n Bytes, 26 Grenville Road,  
Plymouth PL4 9PY. (0752) 667599**

## ACORN USER ADVERTISEMENT PAGES APRIL 1993

10/10 .....114-115	Contex Computing .....76	IFEL.....111	Porters Primary Software....133
4th Dimension .....122,123	Dabhand Computing....120-121	Illusions Magazine.....133	R.M.D. ....133
5 Star Marketing .....134	Dabs Press.....80-81	Intelligent Interfaces .....188	Risc Developments...12,14,101
AJS .....84	Datafile .....32	Irlam Instruments.....20	Sanjay Pattni.....135
Alpine Software .....134	Datastream.....134	Keylink Computers .....135	Selective Software.....133
Alsystams .....112	DD International .....32	Kingsway Computer Services.32	Senlac Computing .....112
Apricote Studios .....50	Dec Data .....118	Krisalis Software .....126-128	Serious Statistical Software.133
Arcaynia P.D.....134	Design Concept .....134	Kudlian Software .....133	Skyfall .....134
Arch Angel .....134	Desktop Projects Ltd .....64-65	Liquid Silicon .....46	Snap Computer Supplies.....68
Atomwide Ltd .....33	Digital Services Ltd.....55	Longman Logotron .....11	Software 42 .....72
Automatic Services .....32	Dixon & Dixon .....135	Manor Court Supplies .....50	Software Bargains ....60,70,106
AVP Computing .....106	Doggy Soft .....134	Matt Black .....134	SSERC Graphics Library ....133
BBC Acorn User Show.....21	E T Software.....135	Micro Discount.....118	Stallion Software .....60
Bits & Bytes.....135	Electronic Font Foundry.....74	Micro-Laser Designs.....98	Storm Software .....133
Brain Games .....76	Explan .....46	Micro-Aid .....76	Superior Software.....OBC
C.U. Electronics.....101	Gnome Computers.....112	Minerva Software .....60,78	The Data Store.....84
Calancraft Ltd.....26	Ground Control.....68	Morley Electronics.....IFC-1	The Serial Port .....101
Chelsfield Publications.....98	HCCS Associates.....17	Norwich Computer Services.72	Turing Tools .....118
Circle Software .....133	HS Software .....133	Oak Solutions .....28,48-49	Unique Way .....26
CJ Computers .....135	Human Computer Interface.105	Oregon.....88	Virtuality .....133
CJE Micros.....46	Icon Technology .....24	Pineapple Software .....84	Watford Electronics .....34-45
Clares Micro Supplies.....87	ICS (Ian Copestake Software) 4-5,6,8		We Serve .....98
Colton Software .....2			Wild Vision.....52
Computer Concepts...62,66,130,IBC			

## £15 STAR LETTER

I read with interest the evidence that some branches of Dixons were not particularly enthusiastic about selling the A3010, and thought you might be interested in my experience last Christmas.

I went into a Dixons branch to enquire about Acorn computers, explaining that I wanted to use it for word processing, home accounts, data storage and the production of the kind of graphics possible with *Revelation 2*, and I was directed to the Atari ST.

To be fair, the assistant did say that he was temporarily employed there over the Christmas period, and was himself an owner of the Atari. It may be true that the Atari would do what I wanted, but no attempt was made to state the advantages of the Acorn or to compare the two machines. Only the more expensive PCs were being demonstrated.

I purchased the Atari which appeared to be faulty, so I rang up to be told that it was obviously faulty and I should return it. The fact that no regret was expressed and that the person's telephone manner was less than pleasing that made me exchange it for an Acorn A3010.

I am, of course, very pleased with the Acorn. I am a 60 year old artist who has always had a fear of computers, and the A3010 is my first computer. I have experienced no difficulty in following the instructions and in using the machine. It seems to me to be an ideal computer for those with an innate fear of computing, and it has given me the confidence to delve much deeper into the subject.

H J R Bennett  
Lincolnshire

We've had quite a few letters along these lines. Here's a quick guide to preparing yourself for the high street gamble. Ask yourself the following questions:

- Are you sure you want to buy a computer from a high street store?
- Is the price significantly better than other outlets?



The A3010: Is it being given the high street push it deserves?

● Can you cope with almost no backup support?

● Are you happy to spend around £500 on something recommended to you by someone who is almost certainly not an Acorn user?

If you can answer 'yes' to all of the above questions, then go to a high street store. If not, then perhaps you should consider going to a qualified Acorn dealer such as Beebug or Watford.

## HOW FAST IS FAST?

First of all, congratulations on a fine magazine! Although I do not own an Acorn computer, I have been buying *Acorn User* since June 1992 to learn more about the Acorn Risc family of computers. My interests are in desktop video production (and in multimedia generally) and AI.

I have delayed any decisions about buying a computer until I am convinced that I have made the 'best' choice. At present I work with the Apple Macintosh IIfx, which I believe to be overpriced for its performance.

The Amiga is touted as being the ideal desktop video computer, but until the Amiga

1200 I was not happy about its 16-bit architecture.

My question is (making allowances for Acorn's lack of software): which machine should I invest in? I am attracted by the speed of Acorn's Risc processor, but I note that in an item in December's news (Who's the Fastest?) no mention is made of the advantages in speed derived from the Amiga's custom chips alleviating the work of the main processor. Doing the same video/graphics work, is the Acorn still faster?

Lloyd Evering  
London

Speed is very subjective: we could go on quoting mips and clock speeds until the cows come home. There is no doubt that the Archimedes is extremely fast: witness the speed comparisons between redrawing in *ArtWorks* and the PC packages such as *Corel Draw*.

However, the availability of hardware and software is surely a more important issue. Acorn's new Replay DIY package (see our review on page 22) should help to make Acorn more of a contender in the video stakes.

## MISPRINTER

On page 111 of the March 1993 issue of *Acorn User* there is a comparative review of the Hewlett Packard 550C colour printer, which contains the statement that: 'Blacks in a colour image are produced by printing all three colours together. The resulting dark brown is good enough when solid but when a shade of grey is required, the difference is all too obvious.'

I have the HP 550C colour printer with the ProPrinter driver from Ace Computing, and I can assure you that the statement in your magazine is incorrect and that true blacks are produced by the HP 550C when printing colour pictures.

George H Foot  
Surrey

Our apologies for the oversight. To enable the HP 550C to print in both colour and perfect black, you do however, need a special printer driver, which was not featured in the review.

Printer drivers for the HP550C are available from Ace Computing on (0954) 211760 and Risc Developments on (0727) 840303.



# Art Works

## Clip Art COMPETITION



Any type of drawing or illustration is acceptable. It could be purely illustrative, a technical drawing, a company logo or practically anything created with ArtWorks.

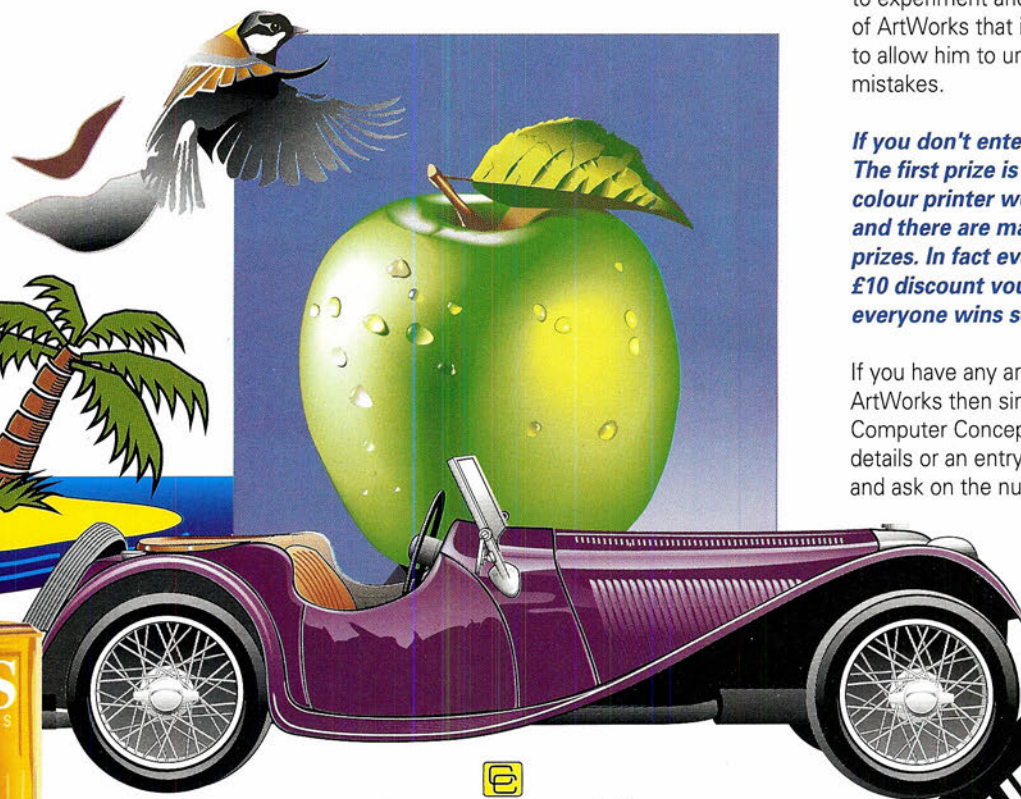
**We are running a graphics competition, open to everyone who has a copy or has access to a copy of ArtWorks**

You do not have to have any great technical or artistic skill. A simple but visually pleasing design is just as likely to be a winner as a complicated technical illustration.

And don't be put off if you think you are not artistic - you can still win. ArtWorks means that with patience anyone can create good drawings. After all, the ArtWorks apple was created by someone with hardly any artistic ability (the MD!) - just the patience to experiment and of course a copy of ArtWorks that is forgiving enough to allow him to undo his many mistakes.

***If you don't enter you can't win. The first prize is a Canon A3 full colour printer worth nearly £1750, and there are many runner-up prizes. In fact every entrant gets a £10 discount voucher, so everyone wins something.***

If you have any artwork produced using ArtWorks then simply send it to Computer Concepts. If you want more details or an entry form then just ring and ask on the number below.



Computer Concepts Ltd

GADDESSEN PLACE HEMEL HEMPSTEAD HERTS HP2 6EX  
TEL: 0442 63933 FAX: 0442 231632

**HURRY!**  
COMPETITION CLOSING 30th APRIL 1993

# TECHNODREAM



## TECHNODREAM

At last, the action-packed sequel which everyone has been waiting for! Now, in addition to a 1 player option, you can choose to have 2 players simultaneously. Now, in addition to horizontal parallax scrolling, there is vertical scrolling to give a much enlarged playing area.

You have been directed by the Terran Defence Agency to pilot the new V7 Terrastormer against the alien forces. Although vastly out-numbered, and initially out-gunned, you can collect extra primary and incendiary weapons and shields as you progress through Outer Space, the Satellites of Kirius and, finally, for the fearless few, the Colonised Worlds.

There are 18 increasingly fiendish stages, with brilliant arcade-quality graphics and massive animated sprites, plus digitised sound effects and 6 atmospheric pieces of stereo music. Control by keyboard or joysticks (Acorn A3010 or RTFM).

Acorn 32 Bit Computers £24.95 (inc VAT)

Other Acorn 32 Bit titles available for immediate despatch by 1st class post:

**PLAY IT AGAIN SAM 1** – Four top quality, classic games, for the price of one!

**Conqueror, Rotor, No Excuses, Hostages** .....£24.95 (inc VAT)

**THE LAST NINJA** – 140 screens of Ninja action and strategy .....£24.95 (inc VAT)

**AIR SUPREMACY** – The unique air/ground/sea strategy game .....£24.95 (inc VAT)

**EGO: REPTON 4** – Brilliant, new Repton puzzle game.....£24.95 (inc VAT)

**REPTON 3** – Four-game compilation plus game designer .....£24.95 (inc VAT)

**SPEECH!** – The widely praised speech synthesiser .....£24.95 (inc VAT)

All our Acorn 32 Bit titles are suitable for the full range of Acorn RISC OS computers, i.e. Acorn A3000, A3010, A3020, A4000, A5000 and Archimedes.

BBC Micro, BBC Master 128, Master Compact and Electron owners. Please note that we have a massive range of games available for these computers, including several compilations. Write to the address below or phone for an illustrated list of all our titles for these computers.

## SUPERIOR SOFTWARE

(Superior Software is a trading name of Superior Microcomputing Ltd.)  
Dent F1 P.O. Box 6. Briaa. S.Humberside DN20 9NH. Tel: (0652) 658585

PLEASE MAKE CHEQUES  
PAYABLE TO "SUPERIOR SOFTWARE."



24 HOUR TELEPHONE

ANSWERING SERVICE FOR ORDERS

### OUR GUARANTEE

- All mail orders are despatched by first-class post
- Postage and packing is free
- Discs that are faulty on receipt will be replaced immediately

(This does not affect your statutory rights)